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OPPORTUNITIES IN CHANGE

Second Meat Science and Distribution Conference

May 8, 1968

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FOREWARD

This publication reports the major presentations of the Second Meat Science and Distribution Conference held May 8, 1968, at the Ohio State University. This conference, as the one a year earlier, was planned by the faculty of the Cooperative Extension Service, the Department of Animal Science, the Department of Agricultural Economics and the Ohio State University. One hundred seventy-five people from Ohio and other states participated in the program.

The Meat Science and Distribution Conference is designed to provide a forum on problems and opportunities in the meat distribution field. The purpose is to extend opportunities for additional dialogue between those who do research in the field and those who have responsibilities for decision making in the meat packing and processing industry and those in food wholesaling and retailing.

Because of the difficulty of transcribing the essence of the workshop sessions, these have not been included except where an initial presentation was such that it could be reproduced in written form and would add to the scope and value of the proceedings.

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DIRECTIONS OF CHANGE IN MEAT DISTRIBUTION

Dale L. Anderson*

The fresh meat department of modern supermarkets continues to be the most important department in the store to the American consumer. Meat is the major item in meal preparation and Americans continue to eat more meat each year. Total annual meat consumption per person has risen about 25 pounds in the last 15 years with beef and poultry the big gainers. Pork consumption is about the same. Veal, lamb and mutton consumption per capita has been declining. Turkey consumption continues up. While the better cuts of meat continue to be in demand the industry is faced with serious problems in selling by-products of the animals slaughtered. The market for edible and inedible fat, hides and offal continues to decline and as a result the better fresh meat cuts will have to cover more of the production and processing costs. Considerable attention is being given to production of leaner, meatier type hogs and cattle. As a result we can expect more and better cuts of meat and probably higher prices unless these are offset by more efficiency in producing and marketing.

One major trend is the increased concern over meat inspection, sanitation and temperature control. New meat inspection laws will have an effect but even more significant will be concern about the handling of fresh meat from slaughter to consumer so that rigid temperature and sanitation control is maintained. Careful handling of meat and poultry through the marketing system along with a good program of market cleanliness, low display case and cooler temperatures, proper humidity, and work methods that move all the meat through cutting and wrapping quickly have resulted in substantial decreases in retail costs. Fresh red meat packages have retained their bright color for up to 7 days and rewraps have been drastically reduced. Retailers will improve sanitation and temperature because it is good business.

There will be competition for meat from other protein sources. Imitation meats made from soybeans have been developed. These products, however, will compete mostly with low priced ground meats and not with the better steaks and chops.

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Meat packers will continue to introduce branded products and there may be considerable improvement in the quality of cold cuts, variety meats, sausages, canned and partially prepared meat food items. This will be necessary if these products are to compete with lower priced meat substitutes. Meat based products may also compete more strongly in the snack food field as improved dehydration techniques are developed. Some slow moving products such as lamb may end up frozen in an attempt to follow the success of the turkey industry.

Frozen meat will probably expand but mostly for sale in convenience stores. We may find more novelty meats such as frozen elk, buffalo, reindeer, and frozen game birds. The selection of major meat cuts, however, will be in fresh form in most supermarkets. Package identification may give more than weight, and price with such information added as edible meat in grams, or ounces, protein content and expected yield if cooked a certain way. Some reliable gauge for meat tenderness may even be developed. Most fresh meat may be better trimmed but boneless meat offers little advantage to cover the added costs. Radiation pasteurization may be used in mild treatments for some less perishable products such as bacon or pet foods.

Food retailing labor costs per unit of output have leveled off in recent years inspite of rising per hour wages (1948 to 1963 data). This indicates substantial improvement in efficiency in food retailing, apparently much greater than in other retail classifications.

While all the records we have indicate substantial increased productivity of wholesale employees, food wholesaling as an industry does not show any significant increases in output per man.[1] This is undoubtedly a reflection of the trend toward centralizing retail functions at the warehouse and reflects added employees for added services. The process seems to be working because overall food wholesaling and retailing output per man hours has increased faster than all retail trade and has kept pace with the non-farm sector of the economy.

Today we are much concerned with this centralization process for meat products. The changes are taking several forms.

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[1]Marketing and Transportation Situation, February 1968.

Packer Shipment Programs

Retailers are adopting packer shipment programs in which Store orders are assembled by the wholesalers and placed as one order. Shipments to stores are still made by the packers.

Claims for this method include savings by placing only one order, (which reduces the number of salesmen you have to deal with), an upgrading of the quality of meat received, training and supervisory programs that upgrade the department, improved advertised image for a group of stores, and central accounting savings. Few claim any price advantage.

Meat Warehousing

Other retail organizations and affiliated wholesale groups have set up warehouses and run their own store deliveries.

Proponents of central warehouses claim that one central delivery saves store time, that a central point improves control of quality, that there is some price advantage, that some central processing services can be provided, that returnable shipping containers can be better utilized, and that here is one point to place complaints.

Levels of Warehouse Processing

Organizations with central warehouses usually begin to do some processing. Some become involved in freezer locker business. Some begin to slice delicatessen products and prepare a variety of smoked meat items. Hams may be sliced and packaged. Many are pretrimming carcasses and breaking quarters into wholesale and knife and saw ready cuts. This may result in a first grind operation for trimmings or a complete central ground meat operation. The next stage for many of these warehouses will probably be packaging of more meat items such as chucks or odd cuts. Some may package poultry.

Advanced Preparation of Meat Carcasses

Much of the meat received in retail meat departments comes in boxes or crates. Pork has been broken into ready to use wholesale cuts or usable parts for some years, yet we maintain expensive meat rails and other equipment to handle beef, veal, and lamb.

For some years the institutional meat business has been receiving meat broken into wholesale cuts. Packers are pretrimming carcasses and

furnishing wholesale cuts and knife and saw ready cuts, often wrapped in film to preserve cleanliness and prevent shrink.

There is, I feel, substantial potential in wholesale cuts and knife and saw ready cuts prepared by the packer and properly protected during distribution. Finding a common ground in pricing this kind of meat seems to be the greatest difficulty, along with mutual trust as to the quality of such cuts.

Central Retail Cutting and Packaging

In about 1959 USDA began research on such problems as scheduling, ordering, refrigeration and display procedures for meat cut and packaged centrally. Once problems were solved, several sizes of central plants were designed. One firm, Falleys, in Topeka, Kansas, built a central plant and has operated it successfully for several years. Other central plants are being built or planned. Improved billout procedures and some other developments are still needed, but these central operations offer unique opportunities to develop more highly mechanized packaging machines and to use new packaging materials for meat.

Mechanization of packaging and labeling in retail stores has progressed about as far as possible with the volume of product handled at each location. In fact, many stores are over-mechanized.

Prepackaging By The Meat Packer

Packer retail cutting is frequently discussed and has been tried on occasion. Preservation of the meat for extended shelf life seems to be essential. Packers now produce a considerable line of brand-name products but fresh red meat seems to have been a more difficult problem.

We already have had some success with poultry programs where the packaging is done by the processor. But the only successful central cutting operation by a packer that I know of is the T. Wall and Sons operation in London, England. This is somewhat unique, and few American retailers would be willing to give up their identity to a packer brand as have these London supermarkets.

Certainly the advent of new techniques of preserving meat might make possible packer cutting. We note, however, that the techniques being worked on today are the same ones that were being worked on 10 years ago. When such techniques are perfected, I suspect packer prepared items will go into the deli case with deli markups and simply be added lines.

I note that in 1964 the number of federally inspected processing plants were growing without much increase in average volume of 23 million pounds per year. These processing plants tend to locate in consuming areas while slaughter plants tend to locate in producing areas and to specialize in slaughter operations.[2]

In 1962, 349 federally inspected slaughter plants handling more than 12,500 cattle per year slaughtered roughly 80 percent of all cattle.

We estimate that 270 distribution warehouses handle over 80 percent of all retail sales and the smallest would handle about as much beef as the smallest slaughter plant included above.

In 1962, 41 inspected slaughter plants handled over 60,000,000 pounds of beef, while we estimate today over 80 distribution centers handle more than 40,000,000 pounds of beef carcasses per year. Therefore, we conclude that there are few economies of scale advantages in retail cutting to the meat packers over distribution centers because they both handle about the same volume of carcass beef.

Retail cutting of fresh cuts probably will be done at a point closer to the retail store than the packinghouse because of the short shelf life, the packaging materials available, and the tendency to "customize" meat cuts to local areas or to retail firms. Even if standardized labels can be developed retailers may want specialized methods of cutting. Where a retail plant could standardize all cuts, a packer may need to cut many different ways to satisfy all customers.

A retail plant could obtain a select weight or grade of beef from several sources. A packer would have to move a variety of weights to different customers.

All these factors seem to be working against packer retail cutting at point of slaughter. I do not believe this rules out retail cutting under contract or arrangements by non-retail meat processors in consuming areas. Some purveyors have developed considerable skills and technological advances in this type of operation.

At the same time I think packers have a tremendous opportunity in preparing vacuum packed pretrimmed wholesale cuts which can be shipped in boxes.

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[2] Agricultural Economic Report No. 129.

Potentials in Boxed Beef Distribution

The physical distribution of beef in boxed form from slaughter houses to retail warehouses, retail stores or central cutting plants in distribution areas offers a considerable number of advantages.

This operation fits the skills a packer would have at a slaughter operation. It would assist in chilling and would permit distribution of different wholesale cuts to several alternative markets. It could reduce the importance of weight classes of cattle and would get most of the trim, fat and carcass by-product assembled at one point. At the same time the distribution center meat plant would achieve considerable economies such as elimination of rails and potential use of high ceiling storage.

Currently about 30,000 refrigerated rail cars are used for transporting fresh meats.[3] The average load has increased to around 34,000 to 36,000 pounds and cars have been developed to handle 80,000 pounds. These cars normally haul meat only one way and must be returned empty to the packer. A 40-foot refrigerated van will handle approximately 30,000 pounds and backhaul for these vans also is difficult because of the overhead rails or structure for hanging beef and the cleanliness problem. The hooks provide an additional serious problem.

Handling all fresh meat in box form would gradually eliminate the necessity for the overhead structure, reduce the tare weight of the transport equipment and offer greater opportunities for a payload on the backhaul.

All the information we have seems to indicate that heavier loading is possible with boxed beef. Certainly with the use of piggy-back and elimination of rails this would be true. However, much research needs to be done on container strength, stacking patterns and air circulation. If palletized loading can be achieved without use of forklifts in the trailer additional tare weight savings could be achieved. The savings in loading and unloading labor would be considerable for palletized boxed beef. Shipping boxed wholesale cuts of beef may also provide a lower transportation cost than for packer retail cuts because of the extra packaging and protection the latter would need.

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[3] New Developments in Meat and Meat-Packaging Technology, Arthur D. Little, Inc.

Use of transportation equipment for multiple purposes including frozen products would be of considerable help. It would increase possibilities for a loaded backhaul, especially for Florida, some east coast points and from the west coast back to the midwest. Our current USDA research program to develop a multi purpose van container should help to provide such equipment.

The greatest advantage, however, may be in the increased cleanliness of the meat itself, especially where central retail cutting is contemplated. Also boxed beef does not require central cutting and therefore would not have to await development of these specialized plants. In fact savings of 1/2 to l 1/2 cents a pound are reported by retail firms switching to boxed wholesale or "knife and saw ready" cuts.

The difficulties that can be encountered include high shipping container cost because of heavy weight, irregular shape and moisture with boxed beef. High stacking and pallet shipping create additional problems. Chilling in transit will not be as easy because of the insulation characteristics of boxes and packer slaughter plants may have to increase space for better chilling. Beef for short hauls may not warrant these box costs although returnable containers could be used.

The considerable problem of determining a method of pricing boxed beef acceptable to both packers and distributors seemingly has not been solved. The method of cutting desired varies and the degree of trim is an oft debated question. Carcass beef has a fairly well understood market price but wholesale or "knife and saw ready" cuts sometimes are not priced consistently with this market. In part the institutional trade price may affect this market in a manner unacceptable to the retailer or the fact that boxed beef is a marginal item to many packers who may work against its use.

Establishment of an acceptable, well understood price structure may remove the greatest barrier to the universal use of boxed beef.

Predictions For The Future of Meat Distribution

Predictions are always dangerous since there are so many alternatives for the future, however there is always the possibility that I will not be around to admit I was wrong and besides they say people only remember the ones that were right. I would say only that these ideas have a better than average chance of happening in the next 10 to 15 years.

1. A considerable improvement in the cleanliness and temperature control of beef products from slaughter to the consumer.

2. Better and more expensive equipment for handling and refrigerating beef especially toward the retail end of the "chain".

3. More uniform, possibly standardized and graded, retail cuts prepared in central plants near the distribution area.

4. Extended shelf life through better sanitation and refrigeration or a preservation process that will leave retail cuts much like the fresh product.

5. Improved multi-use transportation equipment and methods including multi-use van containers. Transport by air remains a distinct possibility.

6. Packer preparation of wholesale cuts at slaughter plants, probably with enviromental packaging.

7. A market price system based on wholesale cuts.

8. A considerable reduction in retail cutting and packaging with retail personnel used for merchandising and educational activities, and a lower retailing cost.

9. Better, more visible packages.

10. Elimination of rails at distribution warehouses with new facilities having high ceiling storage and with hooks becoming obsolete throughout much of the distribution system.

11. More packer or purveyor processed or manufactured products offered for sale.

12. Improved retail delivery equipment and methods.

What will the meat department of the future look like? The emphasis will be on selling not manufacturing. Backroom space will be reduced. Displays will be fancier and more inviting.

The greatest change will be in the meat service personnel. Traditionally the butcher has been behind the case and this characteristic has carried over into self-service meat sales. One desirable change may be to put the merchandiser in front of the case where he can meet and talk to customers. If American meat merchandisers could watch the activities of Japanese fish salesmen in modern Japanese supermarkets some changes might be made. These fishmen are real merchants and hucksters who move out from behind their

American made service and self-service cases. They sell fish with a vim and vigor that seems to have been lost in the U.S.A. European supermarkets have used women to run display cases in meat departments but American consumers seem to prefer men.

If these retail store service people can be trained to become meat merchandisers with knowledge of meat cookery, carving and demonstrating they can provide a very valuable service. Half of the U. S. population is supposed to be under 25 years of age. These young people have little knowledge about fresh meat or its preparation. Who else but the supermarket operator has two chances a week to educate his customer and gets paid for it at the same time out of profits on her purchases?

Picture a young man in a chef's hat demonstrating charcoal cookery in front of a meat display with samples, menus and related merchandise to sell. He will have a small area to prepare special cuts and a few wholesale cuts for this purpose. By providing special service on a very few items and advice on others he can create the impression of a service meat department without the cost. In slack periods he would restock displays and repackage or rework out-of-date merchandise, but his primary job would be to teach and promote meat. The displays would always be full of meat ready to sell since with central processing there would be no early morning processing delays, and the customer would be able to shop at any time and have a full selection. We have been told that use of a good man for this type of promotion can increase fresh meat sales as much as one-third in 6 months. Certainly customers have indicated a desire for assistance and if this potential can be achieved we will see substantial changes in fresh meat sales and promotion.

Because of the importance of meat to the consumer and the nature of fresh meat shopping the fresh meat department will usually remain in its traditional location at the back of the store. Meat across an aisle from other departments tends to reduce the sales of the other department.

Displays will be curved or angled to get away from the straight line effect but the curves will be toward the customer rather than projections into the aisle. This will provide a half moon effect with greater aisle apace in the center of the case where more space is needed. Display cases will be multi-deck, displays will be more open, and there will be less of the front to back "ribbon" displays. Major products will be displayed in long runs across the front of the display and smaller displays of alternate choices (especially those that are more profitable) will be located behind these. Several customers will be able to shop

for a fast moving item such as ground meat. (In many stores today only one customer at a time can get to these displays.) Cases will maintain correct temperatures and lights will be used to better advantage to highlight sales, and lead customers through the displays.

Packages will provide better visibility with better protection and better internal enviroment. Fresh meat packages will be made of combinations ot materials which make the best package. Trays for instance might have a clear plastic bottom for visibility, a plastic foam rim for the desirable whiteness and a pulp liner inside the rim to soak up any loose liquid. The most desirable package not the sale of pulp or plastic will be the goal of package designers. Bacon will be packaged so the housewife can see the full slices and some simple means of removing individual slices to the frying pan may be developed that works like injector razor blades. New means will be found to hold better color for sliced cold meats and more retailers will recognize that these products are perishable. The colors of printed packages will vary more from the reds and yellows, maybe even some white packages will be used.

Computers will help determine consumer wants and desires and ordering will become more of a science with fewer mistakes and fewer over age packages.

Consumers will have a greater choice of cuts and package sizes and meat will continue to improve its position as one of America's most satisfying food stuffs.

The most significant area of change in terms of cost, however, may well come in the area of distribution systems analysis, a concept adopted from the military which would develop for the entire meat industry the lowest combination of handling functions to provide the optimum cost of distributing meat. At present the lowest cost method for the key firm (the one that can demand certain requirements from others in the marketing chain) may not give the lowest overall costs or profits for all the firms involved. A technique for finding and adopting this low cost overall method may be of extreme significance to the meat industry.

Procurement Methods of Retailers*

Thomas T. Stout and Murray H. Hawkins**

Meat procurement methods used by retail food stores and the associated pricing arrangements have undergone fundamental changes in recent years. These changes mark significant adjustments in market conduct in the wholesale meat trade. Resultant pressures in wholesaling activities are causing changes from conventional attitudes and procedures in meat packing and in livestock production and marketing.

This presentation is based on information obtained in interviews with meat directors of thirteen chains and eleven affiliated groups operating in Ohio. The purchasing, merchandising, and policy-making authority of these directors affected the operating procedures of 930 affiliated stores and 538 chain stores in Ohio, plus some additional stores outside the state. These 1,468 stores accounted for between seventy and ninety percent of grocery sales in the metropolitan areas of Ohio. Tables included in this presentation provide comparisons between affiliated and chain organizations. Also, data for seven large chains with 20 or more stores are shown separately from all chains since many distinctive features of chain activities are associated with these larger firms.

Development of Meat Programs

Much of the change that is occurring in meat wholesaling is in response to structural and technological changes in the industry. But the rate of change seems accelerated by the growth of "meat programs." Probably it is safe to say that programs represent a primitive but rapidly-evolving engineering systems approach to the problems of meat procurement, distribution, and merchandising.

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* The authors are grateful to B.W. Marion, and R.E. Jacobson, Department of Agricultural Economics, Ohio Agricultural Research and Development Center, for helpful comments and suggestions during the preparation of this paper.

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We regard a program as a plan for organized service (a) to retail organizations by product suppliers, or (b) to individual retail stores by chain or affiliated headquarters. Supplier-sponsored programs, offered by meat wholesalers or packers, focus on standardizing the relationship between the supplier and retail headquarters. Typical matters for standardization are product specifications, methods of price determination, advertising allowances and various supplier services. These may be developed in response to a request from a retailer. Store programs, developed by chain or affiliated headquarters, attempt to standardize these same matters, but as a prerequisite to their primary concern, which is to service and/or control individual stores.

Whether employed by chains or affiliated groups, store programs vary widely in services provided. The minimum service normally provided is the central billing of meat. Programs among affiliated groups may also include centralization of store orders; central selection, advertising and accounting; merchandising assistance; and the development of a suggested meat department price structure. All of these services are not utilized by all member retailers, some of whom cherish their independence more than the advantages that centralization can provide. However, nearly all chains have at least the above services in their programs and all stores participate fully.

Newer services are being added to store programs, particularly by chains. These include warehousing, carcass streamlining, primal cutting, and preparing and packaging retail cuts. Affiliated programs are becoming more complete and enjoy improved participation by members, but generally these programs stop short of warehousing meat.

Impact of Programs in the Wholesale Meat Trade

Traditional marketing channels in the wholesale meat trade involved much individual price negotiation, purchase by inspection, packer and wholesaler delivery routes to stores, and substantial latitude for independent decision-making by retail meat department managers. The growth of chain and affiliated groups, together with self-service and the desire for product standardization, has encouraged evolutionary changes such as increased use of federal grades for beef, private labels, increased direct shipments which by-pass packer branch houses and independent wholesalers, and the development of chain or affiliate controlled warehouses which receive such shipments. Opportunities for further standardization and central control are enhanced by these changes. Meat programs

represent the efforts of retailers (and also suppliers) to maximize the opportunities for improved operational efficiency that such changes present. The contrast between traditional activities and those that are described in a complete meat program are striking. Central decision-making and control, facilitated by the existence of a warehouse, result in purchase by description, warehouse deliveries by suppliers (direct shipments,) standardized wholesale pricing schedules (formula pricing), and the centralized store services that have been outlined. Autonomy at the store level is reduced, packer/wholesaler delivery routes diminish or disappear, and central strategies are more effectively executed by the homogenized tactics of scattered retail stores.

Control is important. It is facilitated by organizational structure and physical facilities, both of which are structural aspects, and by centralized procurement and formula prices, which are elements of conduct.

Central Warehousing and Organizational Structure

The primary physical ingredient in program control is the warehouse, and the existence or absence of such a facility for meat is determined in part by differences in organizational structure, such as between chains, which own all retail outlets, and affiliates, which do not. In a chain organization, warehousing costs may be offset by savings realized at retail, and the warehouse itself may not be obliged to represent a cost saving in wholesaling activities, per se. But among voluntary chains, for example, the wholesaling integrator may own few or none of the retail outlets, is not directly responsible for retail operating costs, can enjoy few if any retail cost savings in his own operation, and may thus find it more difficult to justify additional cold storage facilities for warehousing meat. Moreover, the voluntary association with member retailers denies opportunities for control that are available to chains.

Therefore, among the firms interviewed the advantages of central warehousing were an open issue. Large chains were especially aware of advantages, particularly those relating to control and to aggregate cost reductions. The majority of affiliated groups denied advantages to central warehousing, however, and among those that did cite advantages, cost and control matters, while important, were less frequently mentioned. (Table 1.) Affiliated organizations made substantially less use of warehouses than did chains, and most chain warehousing activity occurred among large chains (Table 2). To the extent that warehouses are in fact

important elements of meat program control, successful program implementation in an operational efficiency content, would be associated mostly with large chains. But program emphasis on retail pricing strategy such as central ad policies and control of features, frequently employed by affiliates, might not be as severely restricted by the absence of a warehouse. Affiliates did not identify warehouses with feature policy control.

Centralized Procurement and Formula-Pricing

Detailed product specifications are established for centralized procurement. The National Provisioner Yellow Sheet, together with federal grades and the USDA market news service, were used in developing specifications and formula prices. Typically, meat directors request suppliers to submit proposals for a service program within the framework of specifications for quality, quantity and price. Price itself is standardized in a "formula" which incorporates some constant values into the procurement schedule. For example, the more complete formulas may include standardized transportation charges, quality premiums or discounts, adjustment for weight variations, carload price differentials, seasonal price adjustments, etc.

All 24 firms employed formula prices in purchasing some or all of their fresh meats (Table 3). Formulas were most uniformly and widely applied in beef and pork purchases. Formula rigidity in establishing prices was most common among chains, particularly large chains. Affiliated groups frequently permitted "other considerations" to enter into their pricing decisions, and some formulas were quite flexible. But completely unstructured competitive pricing in beef or pork purchases was not the policy of any firm. Such open-market pricing did figure somewhat in broiler purchases and was common in veal and lamb purchasing.

Deviations from rigid formula price schedules were conceded by half the firms (Table 4). Some deviations amounted to seasonal adjustments in annual average price differentials stated in some formulas. However, seasonal adjustments were explicit in the more complete formulas and thus were not regarded as deviations in those circumstances. Also, windfalls to buyers, such as packer surpluses, were exploited when the opportunity arose. Finally, irregularities such as logistic failures and unexpected moves by competitors caused some deviations to occur.

Some Consequent Effects

Selection and Dismissal of Suppliers -- A developing national pattern in which national packers are relatively frequent suppliers of many products to large chains, while regional packers predominate as suppliers to affiliated and independent retailers, is well known.

Retailer needs and expectations for supplier performance were described by Ohio meat directors in criteria for selecting and dismissing suppliers. Differing needs of chains and affiliates were reflected in differing viewpoints about selection and dismissal standards (Table 5-6). Among affiliates, for example, the most important single criterion in selecting a supplier was dependable service and the most common cause for dismissal was unreliable delivery. Among large chains nothing was more critical in selecting a supplier than uniform quality, and two-thirds of all dismissals occurred for inferior or inconsistent quality and unreliable delivery.

Reliable delivery and service are particularly important to affiliated wholesalers. Unreliable performance by a supplier in these matters may result in the loss of retail accounts by the wholesaler. Chains are spared such consequences inasmuch as their stores are captive outlets, and chains place relatively more of their emphasis in supplier performance on product quality.

Price was not a big factor causing dismissals. Some difficulties encountered by affiliates, with regard to high prices and overcharging seldom created problems for chains. Another problem unique to affiliates was difficulty enforcing policies about suppliers not selling direct to stores.

Types of Suppliers

Given these standards for acceptable and unacceptable supplier performance, reasons for the comparative importance of regional and national packers as suppliers are more obvious. Viewpoints of Ohio meat directors reveal some sharp contrasts between affiliate and chain judgments of these two classes of suppliers (Table 7-8). All respondents agreed that regional packers offered distinct advantages to national packers as suppliers. Although large chains were more reserved in this latter judgment, they also cited shortcomings in national packer performance.

Most of these criticisms of national packers related to weaknesses in national distribution and advertising systems; weaknesses which stem from the centralization and standardization that massive volume requires, but which result in inflexibility at local levels. The inflexibility creates problems in terms of local advertising impact, product quality variations, poor delivery timing, sales forces unfamiliar with local demand patterns, difficulties in rectifying errors, and impersonal attitudes about retailers' problems in these respects. To a noticeable degree, however, large chains were less sensitive to these problems than were affiliates and small chains.

But the advantages of national packers frequently outweighed the disadvantages. For example, affiliates liked the consumer acceptance of nationally-known brands, which, in turn, aided meat program control with member-retailers and contributed cohesiveness to the organizations. Chains, particularly large chains, stressed cost and volume requirements and commended national packers for their capacity to respond to these needs. The advantages of regional packers as suppliers were related closely to their local flexibility and thus their capacity to perform well those duties which national packers were unable or unwilling to accomplish with equal care.

The scope of activities and interests of most small chains and many affiliates are confined to relatively small geographic areas, frequently encompassing only part of a state or perhaps just one metropolitan area. Their requirements are similar in proportion, to the abilities and interests of regional and local packers. This similarity of interests generates marketing channels wherein small chains and affiliates purchase primarily from regional and local packers, but turn to national packers for supplementary advantages such as national brands. Conversely, large chains and national packers work together and seem to regard local inflexibility generally as a fact of life and to establish trade channels which function well in meeting massive volume requirements of both parties. But large chains turn readily to smaller packers for added advantages such as service flexibility and locally-established brand names. In each case, the buyer-seller relationship emerges as a marriage of compatible partners joined in a union of mutual requirements. These relationships were apparent in supply channels used by Ohio retailers, although regional and local suppliers supplied more than half the volume of most products to both chains and affiliates.

The Net Effect

The impact of meat programs on operational efficiency, wholesaling methods and trade channels is affected by the control exercised over the program. Centralized procurement and standardized prices improve this control. But the degree to which purchases may be centralized, and the rigidity with which formula prices can be enforced is related to organizational structure, firm size, and physical facilities. The effect of these factors is illustrated by direct comparison of selected features of large chain and affiliated operations (Table 9).

Large chains made extensive use of central warehouses which, for reasons which have been outlined, affiliated groups found more difficult to justify, Moreover, large chains adhered more closely to formula prices than did affiliates, and enforced their price standards more rigidly.

Now formula pricing necessarily requires product specifications. Quality, quantity and price specifications are conducive to purchase by description, which is commonly associated with improved efficiency in buying and selling. Large chains generally purchased a higher percentage of supplies by description than did affiliates, particularly in beef purchases which represented about 40 percent of retail meat sales for both types of operation. Self service and large volume have already established chain store policies for product specifications and purchase by description. Strict application of formula prices and related standards, together with central receiving facilities as an aid to enforcement, emerge as control elements which assist this established chain policy.

The meat volume of large chains typically exceeded that of affiliated groups, yet the average number of suppliers servicing chains was generally lower than the number supplying affiliates. Part of this could be explained by large volume and more complete product lines typical of national packers through which large chains purchase most of their supplies. But part of it must be associated with the orderliness of procurement practices which is a principal outcome expected of an effective meat program. A measure of orderliness is the frequency with which purchase orders are submitted to suppliers. Affiliates typically placed daily orders for major supplies such as beef, broilers and fresh pork; large chains submitted orders once or twice per week. Affiliates placed orders with national packers for only a small percentage of total needs; large chains made frequent purchases from national packers but did not purchase a majority of their requirements for any product except canned hams from national packers. Nevertheless, the tendency for affiliates to seek the services of smaller suppliers

contrasted with the tendency of large chains to minimize contacts with small volume suppliers.

Some Broader Implications

Meat programs do not generate market power; they express the demands of a power that already exists. They are not a basis for internal control; they are created by controls already at hand. They do not create a basis for organized activity; they arrange the activities that already enjoy an organizational framework.

Much of the enthusiasm about meat programs and much of the urgency that accompanies their development among small chains and affiliates perhaps rests therefore on mistaken expectations that are not likely to be realized. Meat programs will not help to control member-retailers as much as control of member-retailers would help programs. A program may not make up for the lack of a warehouse as much as a warehouse might make up for the lack of a program.

But when viewed in the proper context, as a systems approach to activities that already can be controlled, meat programs hold attractive possibilities for retailers. So attractive are the possibilities that incentives to achieve the prerequisite control elements probably will be a contributing factor to the growth and merger rate among small chains, to increased development by affiliated wholesalers of "company stores," and to increased levels of commitment imposed upon affiliate membership. Present meat programs among small chains and affiliates, even lacking sufficient control, or failing to represent significant power, undoubtedly aid the organizations they serve by bringing a relative degree of order to a comparative condition of chaos. But the full benefits of programs in the long run are likely to accrue to organizations with the internal structure to control them and with sufficient market power to benefit from having it expressed through a program which can be enforced.

TABLE 1: Percentage Distribution of Advantages of Central Warehousing by Type of Retail Organization, Ohio, 1964-65

Advantages	Affiliated Groups	Large Chains	All Chains	All Retail Firms
	%	%	%	%
None	54.5	14.2	38.4	45.8
Yes	45.5	85.8	46.2	45.8
Do not know	0.0	0.0	15.4	8.4
	100.0	100.0	100.0	100.0
Specific Advantages Cited a/				
Continuous flow to stores when needed	16.6	11.8	11.8	13.8
Small store inventory	8.3	0.0	0.0	3.4
Fresh product on shelf	8.3	0.0	0.0	3.4
Better control	25.0	35.3	35.3	31.5
Lower costs	16.6	23.5	23.5	20.2
Better bargaining position	8.3	5.8	5.8	6.8
Make self indispensable	8.3	0.0	0.0	3.4
Only way to get national brands	8.6	0.0	0.0	3.4
Controls store delivery	0.0	17.6	17.6	10.3
Features easier to obtain	0.0	6.0	6.0	3.8
	100.0	100.0	100.0	100.0

a/ Percentage distribution of responses from "yes" proportion in top section of table.

TABLE 2: Percentage of Meat Volume Delivered by Suppliers to Retail Warehouses, 1964-65 a/

Meat Product	Affiliated Groups	Large Chains	All Chains	All Retail Firms
Carcass Beef	0.0%	56.2%	30.1%	16.0%
Beef Cuts	6.8 b/	62.0	42.6	15.5
Fresh pork	0.0	31.8	17.5	10.9
Smoked Pork	4.6	44.7	23.9	11.7
Fresh Sausage	0.0	13.3	7.3	2.6
Veal-Lamb	1.8	58.0	41.9	18.5
Broilers	9.7	44.5	24.5	18.3
Luncheon Meat	2.2	8.8	15.4	12.3

a/ Based on estimates provided by meat directors, frequently unsupported by reliable volume data. Figures are simple averages, therefore, without regard to variations in volume. Partial volume data suggest however, that the striking progress in warehousing among large chains is understated in all-firm averages in column four.

b/ For example, suppliers delivered 6.8% of beef cuts to affiliate warehouses, The remaining 93.2% was delivered store-door over conventional supplier delivery routes.

TABLE 3: Percentage Distribution of Factors Which Determine The Prices Paid for Wholesale Meat Products, by Type of Retail Organization and Class of Fresh Meat, Ohio 1964-65

Retail Organization and Meat Products	Unstructured Competition Pricing a/	Rigid Formula	Flexible Formula b/
	%	%	%
Affiliated Groups			
Beef	0.0	54.5	45.4
Pork	0.0	54.5	45.5
Broilers	9.2	45.5	45.5
Veal	72.6	18.2	9.2
Lamb	72.6	18.2	9.2
Large Chains			
Beef	0.0	100.0	0.0
Pork	0.0	100.0	0.0
Broilers	14.3	85.7	0.0
Veal	57.1	42.9	0.0
Lamb	42.9	57.1	0.0
All Chains			
Beef	0.0	100.0	0.0
Pork	0.0	100.0	0.0
Broilers	15.4	84.6	0.0
Veal	61.5	38.5	0.0
Lamb	46.2	53.8	0.0
All Retail Firms			
Beef	0.0	79.2	20.8
Pork	0.0	79.2	20.8
Broilers	12.5	66.7	20.8
Veal	66.6	29.2	4.2
Lamb	58.3	37.5	4.2

a/ Pricing without the aid or utilization of formula.
b/ Perhaps involving little more than "cost plus freight" and subject to amendments and alteration in view of competitor's actions, cut-out tests, store requirements, etc. May involve only "features".

TABLE 4: Percentage of Retail Organizations Allowing Exceptions to Formula Prices, Ohio, 1964-65 a/

Exceptions	Affiliated Groups	Large Chains	All Chains	All Retail Firms
	%	%	%	%
Irregular	0.0	0.0	8.1	4.0
Seasonal	44.9	28.9	16.3	29.1
Packer Surplus (lower price)	8.7	28.9	21.6	16.7
None	46.4	42.2	54.0	50.2
	100.0	100.0	100.0	100.0

a/ Based on subjective responses to open-ended interview questions. Differences in interpretation of questions resulted in responses difficult to categorize. For example, occurrances regarded by meat directors of small chains as irregular deviations from formulas could have been regarded by directors of affiliates, which applied more "flexible" formulas, as within the scope of the formula price structure.

TABLE 5: Percentage Distribution of Significant Factors in Selecting a Supplier By Type of Retail Organization Ohio, 1964-65

Factors	Retail Organizations			
	Affiliated Groups	Large Chains	All Chains	All Retail Firms
Dependable service	37.8	14.2	17.9	27.0
Lower price	16.6	16.6	10.2	13.1
Meat Program	12.1	11.9	19.2	15.9
Uniform quality	22.7	30.9	19.2	20.8
Reliability, integrity	3.0	26.4	17.9	11.1
Packer cooperation	6.0	0.0	1.2	3.4
Advertising promotion	1.8	0.0	0.0	.6
Community image	0.0	0.0	11.5	6.2
Personal contact	0.0	0.0	2.9	1.9
	100.0	100.0	100.0	100.0

TABLE 6: Percentage Distribution of Factors Significant in Causing Cancellation of a Supplier, by Type of Retail Organization Ohio, 1964-65

Factors	Retail Organizations			
	Affiliated Groups	Large Chains	All Chains	All Retail Firms
Inferior, inconsistent product	12.5	31.2	33.3	23.5
Unreliable delivery	37.5	31.2	29.6	33.3
Failure to carry out commitment	16.6	18.7	14.8	15.6
Direct selling to stores	12.5	0.0	0.0	5.8
Misrepresentation	4.1	6.2	3.7	4.0
Poor claim service	4.1	0.0	0.0	2.0
Failure to develop specials	4.1	6.2	11.2	7.8
Overcharging	4.1	0.0	3.7	4.0
Consistent higher pricing	4.5	0.0	0.0	2.0
No consumer demand	0.0	6.5	3.7	2.0
	100.0	100.0	100.0	100.0

TABLE 7: Percentage Distribution of Advantages and Disadvantages of National Packers as Suppliers by Type of Retail Organization, Ohio, 1964-65

Disadvantages Advantages	Affiliated Groups	Large Chains	All Chains	All Retail Firms
	%	%	%	%
No Advantages	54.5	42.8	53.8	54.1
Disadvantages				
Ineffective advertising	14.2	0.0	0.0	6.6
Poor distribution systems	43.2	20.0	37.5	40.0
Weak sales force	14.2	0.0	0.0	6.6
Inconsistent, poor quality	14.2	20.0	12.5	13.0
No local image	14.2	0.0	12.5	13.0
Price too high	0.0	20.0	12.5	6.6
Too impersonal	0.0	40.0	25.0	14.2
	100.0	100.0	100.0	100.0
Yes Advantages	45.5	57.2	46.2	45.9
Advantages				
Universal	66.6	14.2	30.0	43.7
Wide consumer acceptance	33.4	14.2	10.0	18.7
Complete meat program	0.0	43.2	30.0	18.7
National "free" advertising	0.0	14.2	10.0	6.2
Availability of product	0.0	14.2	10.0	6.2
Personal contacts	0.0	0.0	10.0	6.5
	100.0	100.0	100.0	100.0

TABLE 8: Percentage Distribution of Advantages and Disadvantages of Regional Packers, by Type of Retail Organization, Ohio, 1964-65

Disadvantages / Advantages	Retail Organizations: Affiliated Groups	Large Chains	All Chains	All Retail Firms
No Advantage	0.0	0.0	0.0	0.0
Yes, Advantages	100.0	100.0	100.0	100.0
Advantages				
Higher, more consistent quality	24.0	9.0	7.6	14.0
Faster and better distribution	28.0	27.0	28.2	28.1
Local image	16.0	18.0	23.0	20.3
Price	4.0	4.5	10.2	7.8
More effective advertising and promotion	28.0	22.7	20.4	23.4
Maintain minimum retail prices	0.0	4.5	2.5	1.5
Personal control	0.0	4.5	2.5	1.5
No volume requirements	0.0	9.8	5.6	3.4
	100.0	100.0	100.0	100.0

TABLE 9: Selected Operational Characteristics of Affiliated and Large Chain Retailers Selected Meat Products, Ohio, 1964-65

Operational Characteristics	Product Class					
	Carcass Beef	Fresh Pork	Broilers	Veal	Lamb	Smoked Hams
Percent warehouse of total deliveries						
Affiliate	0.0	0.0	9.7	1.8		4.6 b/
Large Chains	56.2	31.8	44.5	58.0		44.7 b/
Percent firms with rigid formula applications						
Affiliate	54.5 a/	54.5	45.5	18.2	18.2	c/
Large Chains	100.0 a/	100.0	85.7	42.9	57.1	c/
Percent Volume Purchased by description						
Affiliate	29.5	c/	99.1	27.7	54.1	c/
Large Chains	61.5	c/	77.2	70.0	72.9	c/
Average Number of Suppliers						
Affiliate	4.3 a/	4.2	3.7	2.0	2.3	8.6
Large Chains	5.7 a/	3.4	2.5	1.8	2.2	5.0
Modal days per week orders given to suppliers						
Affiliates	5 a/	5 d/	5	2	3	2
Large Chains	1 a/	1 d/	2	2	2-3	1
Percent Volume Supplied to Affiliates by						
National packers	4.2	8.0 d/	7.6	17.5	41.6	4.9
Regional packers	72.3	86.5 d/	45.8	38.1	41.6	93.9
Local packers & Wholesalers	23.5	5.5 d/	46.6	44.4	5.5	1.2
Large Chains by						
National packers	40.8	14.0 d/	22.9	10.9	44.2	28.4
Regional packers	59.0	80.5 d/	37.8	68.3	55.8	71.6
Local packers & Wholesalers	0.2	4.5 d/	39.3	20.8	0.0	0.0

a/ All Beef
b/ All smoked pork
c/ No data
d/ Loins only

CHART A

TWO KINDS OF PROGRAMS:

1. Supplier-Sponsored. To standardize --

   - product specifications
   - price determination
   - advertising allowances
   - supplier services to retailers.

2. Store Sponsored

   - to standardize
   - to service or control individual stores

CHART B

STORE PROGRAMS VARY:

1. Affiliated Programs--

   - central billing at least
   - But also:
     - centralized orders
     - centralized selection and buying
     - advertising
     - accounting
     - merchandising assistance
     - retail pricing structure
   - NOT ALL SERVICES ARE USED BY MEMBERS!

2. Chain Programs--

   - Include all of the above PLUS
     - primal cutting
     - carcass streamlining
     - retail cutting and packaging
     - warehousing
   - ALL STORES PARTICIPATE FULLY!

CHART C

PROGRAMS CHANGE THINGS!

1. Without Programs--

- individual price negotiations
- purchase by inspection
- wholesaler (packer) delivery routes to stores
- use of packer branch-houses
- much individual latitude for retail meat department managers

2. With Programs--

- standardized wholesale prices (formula pricing)
- purchase by description
- decreased delivery routes
- increased central deliveries (warehouses)
- by-passed branch-houses and independent wholesalers
- decreased autonomy for individual stores
- more centralized retail control

CHART D

CONTROL IS IMPORTANT:

CONTROL IS GAINED TWO WAYS:

1. STRUCTURAL STRENGTH--

   - organizational control -- (chain or affiliated)
   - physical facilities (warehouse or no warehouse)

2. METHODS OF CONDUCT--

   - centralized procurement (warehouses)
   - formula prices (organizational control)

Meat Distribution Centers--Where Are We Now?

Carroll M. Cannoles*

Due to short time available, we will avoid the luxury of lengthy reflection. Instead, we will concentrate on the anticipated future, accepting those principles proven in experience.

The basis of today's technology is established in the past. If we are aware of what brought us to where we are, at this moment, we should be able to recognize the opportunities just ahead.

Restricted farm processing of livestock evolved into limited areas of distribution. With the introduction of commercial refrigeration, meat processing hastened into the wide area distributive system known today--propelled by sophisticated packages wrapped in multi-purpose films designed to earn meat first place in consumer surveys pertaining to food nutrition.

Innovators identified a market need for packaging and then developed the vacuum package technology. By combining the market need and the technology for packaging, a consumer need was satisfied. Naturally, it was not that simple, but it would obscure the basic point to list details.

This recent and familiar history applies to red meat today. I am reasonably certain everyone here is aware of the low profit margins of both the chain store and the meat packer. Fractions of a penny are equally important to both, and it is in this area of intense competition that both the retailer and wholesaler are striving to improve their profit situation. Meat distribution centers including central meat processing and not merely warehousing, to be discussed today as a subject of immediate importance, is one area in which the supermarket industry believes an opportunity may exist to improve its profit margins.

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Many of the principal reasons for failures of central meat processing over the past 20 years have been intelligently considered and carefully eliminated by the latest innovations. What is important is that we recognize that although the future has some obscurity, it also has a great deal of clarity.

The emerging trend toward central meat processing is, I understand, like a young girl making her debut--she comes out and is presented, but her future course is uncertain. Emerging trends are usually championed by their innovators and criticized by their detractors. Emerging trends must stand the test of economic feasibility. The burden is on them to withstand the critical eye of those who resist change and prefer the status quo. There must be change if there is to be growth in any industry. The wise business man recognizes the trends early, evaluates their impact on his individual firm and takes action to capitalize on the trend.

Suppose we consider the retailer and the factors influencing his reasoning behind the move to central meat warehousing and processing. While experts still disagree as to the extent and speed with which central processing will come, all agree that in theory and principle it is less efficient to do cutting and packaging at multiple retail locations than in one "wholesale" type location. The combination of increasing labor costs in the retail meat departments plus the inability to attract labor even at the higher rates, must be acknowledged as a major factor. The National Commission on Food Marketing reported labor represents 45.9 cents of all operating expenses, or 8.5 cents of the sales dollar.

Labor's recognition of the labor shortage was recently evidenced in an article in Food Merchandising by A. N. Wecksler. In Mr. Wecksler's story, Mr. Thomas J. "Jack" Lloyd, International President of Amalgamated Meat Cutters and Butcher Workmen of North America, was quoted as agreeing that "Full-Scale central meat cutting is on its way, but sees it five to ten years off." Meanwhile, he will seek retirement or severance pay arrangements for the many union members who may be displaced when it comes.

Central meat cutting has been a major negotiating issue on the west coast. In recent Seattle and San Francisco settlements, Lloyd said he made concessions in allowing the further breaking down of certain fresh meat cuts. This is basically his concept--a gradual approach to fend off the full impact of what he feels is inevitable.

On the opposite side, the supermarket industry seeks rapid conversion in order to extricate itself from the squeeze between higher costs of doing business and consumer resistance to higher prices. A dedicated, intelligent training program, jointly developed and augmented by labor and the supermarket industry, designed to enable the retail meat cutter make the transition from back room operations to central meat cutting, could be tremendously effective and would encourage the transition to central meat processing plants.

In 1963, the Agricultural Marketing Service of the U. S. Department of Agriculture, published a Marketing Research Report #628 which was prepared under the direction of Mr. Dale Anderson, whom you heard this morning. This study of the feasibility of central meat warehousing and processing is considered by many to be the foundation for the intensified effort since that time.

Everyone here may be familiar with the study presented in 1966 by A. T. Kearney Company, a Chicago Management Consultant Firm, for the National Association of Food Chains. The Kearney Report brought into sharp focus the losses incurred in the then normal fresh beef distribution system. Fresh beef being handled 19 times before it reached the consumer resulted in heavy shrinkage losses---as much as 5 1/2 percent in the typical nine-day cycle from slaughter to sale.

The Kearney Report brought out many other factors significant to the retailer:

A. Economics of locating packing houses closer to feedlots, thereby reducing freight costs.

B. Economics of packinghouse or central meat warehouses breaking beef, leaving up to 20 percent waste trim out at that point and saving the cost of transporting to the retail store.

C. Economics in handling through unitization and mechanization--from hanging beef to lugs, pallets or boxes.

D. Economics of controlled atmosphere.

The Kearney study indicated that direct delivery from packing plant to retail store of trimmed primal cuts--wrapped, boxed, and unitized--provides the lowest cost method of distribution. Almost 18 months later, our packer friends have not yet leaped into the fray with a great deal of alacrity! Packers present may wish to comment on this observation mentioned in the Kearney Report.

Other studies also have indicated many packers could take advantage of the opportunity to produce packaged ground beef for the retailer. Chains cannot afford to have skilled butchers grinding and packaging. Eighteen months ago, there were approximately 25 marketing areas in the United States being served in this manner by a central meat warehouse. Two months ago, I met with officials of a chain store organization which planned to distribute ground beef in 38 states from a group of strategically located central meat processing plants.

I recently visited a chain store central meat plant designed by a gentleman who had come from the dairy industry. He was incorporating in the meat plant many ideas which had been successfully demonstrated in extending the shelf life of packaged dairy products. Included in his plans were washing of beef carcasses before entry into cutting room; filtered, sterilized air in the cutting room; controlled atmosphere in packaging; extensive use of stainless steel in equipment, each step designed to overcome the well-known hazards of improper sanitation, temperature and humidity controls.

A problem which must be resolved by those going into central meat processing is how to accommodate those customers who, in certain areas, want thicker--or thinner--steaks or chops than a rigid standard would dictate. Will the elimination of store level cutting to provide this individual store selection stimulate the revival of the service type meat store? It was interesting to note in a recent issue of The National Provisioner a picture of an old-fashioned meat market opened in Sioux City, Iowa, by the Needham Packing Company, one of the largest cattle slaughterers in the United States.

Another problem--popularity of meat items as a sales promotion device, the cost of which frequently was borne or shared by the packer may have to be absorbed completely by the retailer if he goes the complete route of producing fresh and processed meats.

Further, the retailer must recognize the change in type of personnel needed in meat departments of stores serviced by central meat processing plants where the final step of packaging is accomplished. These store level employees need to be marketing oriented, rather than technically oriented, as most meat cutters are.

The chain store industry is aware of these problems and is working to solve them. The chain store industry also recognizes the inherent operating problems of the meat packer. One chainstore official recently commented, "The meat packing industry has been accused of being archaic, provincial, immovable and has been described in even less flattering terms. If these charges are partially correct it is not from design." It is one thing to charge out a carcass at $45.00 per hundredweight and another to charge out 45 different consumer cuts at a wide price range to yield $45.00 after allowing for shrinkage, trim, labor, overhead, etc. It is precisely in light of this type problem that the highly specialized meat purveying industry will make a contribution to this trend. It is my view that the central meat processing plants may be seeking managers from the meat purveying industry more than from the meat packing industry.

As an example, successful central meat warehouse--West Coast Grocery Company of Tacoma, Washington. In six months, participating independent retailers increased from 83 to 150 and a potential of 300 is the target. This central meat warehouse is being operated by meat industry veterans long in experience in the meat packing and purveying business before joining West Coast Grocery Company.

In their report to the Iowa Development Commission last year, "Meat Technology and Transport," Robert L. Walroth and Richard R. Konicek indicated centralized packaging, already widespread in Europe, would become the dominant method of distribution in the United States in the near future. However, one of the large chains, committed to a complete change to centralized packaging, estimates it will take 15 years to complete.

Let's take the meat packer or processor next--what does central meat warehousing mean to him?

Some of the companies represented here today were also represented at the joint meeting of NAFC-AMI held in Los Angeles earlier this year when central meat processing was reviewed. I have discussed this meeting with several meat packers who attended. Those packers principally in the business of slaughtering said the trend appeals to them. Although they agreed their operations would then be little more than an abattoir for the chains--to them it would be a tremendous relief to make warehouse rather than store-door deliveries. In effect, they were stating they would then be comparable to the largest of the cattle slaughterers who ship carload or truckload lots of beef to customers far from the point of origin.

Such a movement will lead to a growing number of large, modern, highly automated killing operations where the latest production technology is mated with buying and selling techniques which stagger the imaginations of many industry veterans. It has been interesting to observe the current programs of several of the meat industry giants. Especially so, since what they are now doing is essentially what the retailer is concurrently doing in central meat warehousing.

Over a year ago, the head of a large cattle slaughtering company, addressing the annual meeting of the National Association of Meat Purveyors suggested the purveyors discard the practice of buying fores and hinds, buying instead from his plant vacuum packaged New York strips, tenderloins, top and bottom butts, O.P. ribs, rib eyes, trimmings for ground beef, etc. When I was in Florida in January, I happened to follow the sales representative of this company by one day---believe me, this company had made an impact with their story to purveyors about operating their business without rails, meat hooks and rollers, needing only shelves in the coolers to store the fabricated, wrapped in film, boxed product.

You may have noted the brief announcement in the meat trade journals in April that a major packer was starting a pilot operation in Ft. Worth prepackaging fresh red meats.

The foresight and disregard for precedent by men such as Lloyd Needham, in Sioux City; Tom Mehesan in Spencer, Iowa; Andy Anderson in Denison, Iowa; Glenn Monfort in Greeley, Colorado, prompted the national packers to accelerate their own planned modernization programs. Such competition promotes the change characteristic of an industry of many suppliers. As a result of the impatience with the past demonstrated by these industry leaders, the technology of the beef industry has progressed further in the past ten years than anytime since 1930.

A significant factor is the more consistent uniformity of carcass beef specified by chain buyers and the successful efforts of the livestock producer and feeder to meet these requirements. Such standardization in carcasses--and cuts--plus the explosion in the number of Federally Inspected meat packing plants as a result of the Wholesome Meat Act of 1967, means these products may now be even more readily available throughout the country.

A standardization of carcass dressing of beef, fashioned after the successful program initiated by the National Association of Meat Purveyors in 1962 for marketing fabricated, fresh beef, veal and lamb, would further contribute to the need for maximum production efficiency in order for the straight slaughterer to survive in a situation of larger, but fewer, retail buyers. Just two weeks ago, the Western States Meat Packers Association reported their board of directors had approved a proposal to formulate and prepare a set of specifications and standards for carcass cattle and primal cuts.

It should be recognized, however, that every meat packer may not wish to sell to a central meat warehouse, and , conversely, all chain stores may not want to risk the central meat processing type operation. For example, the smaller chain of 25 or 50 stores may prefer a working arrangement with one or two packers to be its principal suppliers--and the packers continue the processing and delivery to each store. Obviously, labor strife, or an accident, or an act of God affecting the meat plant would be a hazard which could temporarily leave the chain without a source of supply. Nevertheless, this may have many advantages and even closer ties may be accomplished through individual stock ownership in the retailer by the meat processor and vice versa.

What of the smaller meat packer or processor who slaughters a limited number of livestock and manufactures a top-quality line of processed, branded meats? It may be that his function will be to continue "filling in" on the local level when the principal supplier falls short on his commitment. It may be well for the retailer to protect this "ace in the hole" by making this smaller packer's job as easy as possible. By this I mean when store-door deliveries are desired to fill shortages, the retailer may do well to see that this type packer delivers to those stores closest to his packing plant--not to those isolated, distant stores. This has not always been the case.

This same smaller packer also may choose to distribute his products principally to those food processors who further specialize in their own production. Or, this type meat packer may prefer to be a supplier to the meat purveyor who represents one of the most exciting, stimulating and challenging segments of the meat industry. The stories of Ohio's Grill Meats, Inc., at Sandusky; the Ohio Steak and Barbecue Company in Columbus; the John S. Hilberg Company in Cincinnati; Evelyn Sprague, Inc., at Englewood; and the Victory Provision Company in Dayton are some of the most fascinating success stories in the purveying industry.

As more of the smaller packers discover by gradual transition that their own plants are capable of producing many items developed by their purveyor clients, it is my view that an increasing number of these smaller packer/processors will move in that direction.

Central Packaging--The Final Step

In October 1967, Meat Magazine reported on an American Management Association seminar, held in New York, the subject of which was "Central Meat Packaging." It was surprising to learn only four meat packing companies were represented among the 69 registrants, though the plans discussed at this meeting could have a tremendous impact on the meat packing industry. Phil Bouckeart of the Kroger Company, Cincinnati, was quoted as stating that central packaging was definitely the meat packer's responsibility in the long run--until the packers reach this point, it will be the supermarket's responsibility.

Richard Berg, Vice President, John Morrell and Company, agreed with Mr. Bouckeart's statement, then added, "When the packers are able to work out with the retailer how he wants his meat cut, how it will be priced for this service, progress will be made--and the consumer ultimately will enjoy the benefits of better branding, better quality control, better packaging, all at lowering prices."

Containerized shipments, refrigerated, may obviate the need for the backroom. The containers could be placed on the loading dock adjacent to the display case, serving as the walk-in cooler. Converting the meat department area entirely to a sales operation will substantially reduce operating and overhead costs and contribute to increased profits.

The shelf life problem of fresh meats will continue to be improved as the result of research by the many fine companies producing meat packaging films, plus improved sanitary conditions in central meat plants and more sophisticated temperature and humidity controls throughout the system.

Experience teaches that men are so much governed by what they are accustomed to see and practice, that the simplest and most obvious improvements in the most ordinary occupations are adapted with hesitation, reluctance and by slow graduations--Alexander Hamilton, December 5, 1791. The change to central meat processing represents more than an ordinary

change so the initial resistance has been somewhat more difficult to overcome. However, the acceptance of innovation is in itself an invigorating element.

New knowledge, skills and understandings are coming so fast that retailers and packers entering into central meat processing must have education and training programs to live with them. These and other related problems will be overcome in the competitive arena of American enterprise as this emerging trend will be accelerated in the future.

Meat Science and Distribution Conference
May 8, 1968
Ohio State University
H. W. Ockerman, Ph.D.

Moisture and Fat Analysis of Meat - A Business Necessity

It is essential to know the composition of meat products you buy and sell. Not only to control quality but also in order to make an intelligent decision on the value of these products. The way to obtain this information is to conduct a relatively simple analysis on a sample of the product. Without this information you are buying and selling "a pig in a poke."

A lot of meat, bought and sold today, is priced using only an estimation of the moisture, fat and protein content. Many processors and retailers, however, are beginning to establish specifications for in-coming product to assure uniform quality and value. Specifications should also be used in selling a product for several reasons.

1. To insure customer satisfaction and repeat sales by supplying a uniform product.

2. To insure receiving value for the product.

3. To insure compliance with Federal and State regulations.

One useful control for meat products is an analysis for moisture and fat content.

Is there enough variation in meat products to cause concern? To answer this question we have sampled ground product in the Columbus retail market area and have analyzed it for moisture and fat content. The following table gives an idea of the variation:

Sample description	Difference between the high and low percent fat content found in these products.
1. Ground beef	
a. Same store - same time	6%
b. Same store - two week period	13%
c. Different store - same chain - same time	10%
d. Different store - same day	23%

2. Bologna

   a. Same kind - same store - same day 4%

   b. Different brand - same store - samd day 15%

By these analyses it is evident that the variation in fat content found in ground products at retail is tremendous. How many retail store operators would allow a 6% variation in the price of the product they bought on any one day (notice 1 a. above)? Simple moisture and fat analysis with specification could reduce this variation.

Good sampling is the first step in any type of chemical analysis. No analysis can be any better than the sampling technique. The sample must represent the entire quantity of product that you are attempting to analyze. Meat products are normally quite difficult to sample. Grinding and mixing several times is, therefore, a pre-requisite to good meat sampling techniques. To illustrate this fact a tub of boneless beef was sampled at each of its four comers and analyzed for moisture and fat. It was then broken and re-analyzed, mixed and ground and re-analyzed, and mixed and ground again with a sample each time being taken from the corners. The following table will show the fat analysis of this product during the various processes:

This table illustrates the importance of sufficient mixing and grinding before sampling. The best chemical analysis on a poorly sampled product is useless.

Moisture and fat analyses are relatively simple to perform. The following brief description gives an idea of the equipment used and the simplicity of the procedure. The first to be described are moisture analyses. There are three basic types.

1. Oven drying method of analysis - Ten grams of a representative sample of the product is placed in an aluminum pan and weighed on an accurate balance. The necessity of good mixing is evident since this 10 grams must represent the total quantity of meat analyzed. The aluminum pan containing the meat sample is placed in a temperature controlled oven. This oven is maintained at $100^{\circ}C$ or $212^{\circ}F$. The sample is left in the oven for 18 hours. This will evaporate the moisture present in the meat sample. After 18 hours the sample is removed from the oven, re-weighed, and the loss in weight divided by the initial sample weight will give the percent moisture of the meat product. If the initial weight of the meat sample was 10 grams and the weight after drying was 4 grams, the sample would have lost 6 grams during the drying process. This loss in weight (6 grams) divided by the initial weight (10 grams) would yield a 60 percent moisture analysis for this particular meat sample.

Type of Sample	1st Corner	2nd Corner	3rd Corner	4th Corner	Difference between high & low samples	Average	Difference between this average & the final average
Boneless beef	23.2%	16.8%	70.9%	5.3%	65.6%	29.0%	7.8%
Broken beef	13.7%	12.8%	17.1%	38.7%	25.9%	20.6%	0.6%
2nd grind after mixing	21.7%	18.9%	21.5%	25.1%	6.2%	21.8%	0.6%
3rd grind after mixing	21.3%	21.6%	20.7%	21.3%	0.9%	21.2%	

2. Vacuum oven drying - This procedure is the same as the oven drying technique except a vacuum oven equipped with a vacuum pump is used to analyze the sample. This reduces the time of analysis from the 18 hours required in the oven drying technique to approximately 5 hours required with the use of a vacuum oven. The calculation and theory behind this analysis is the same as the oven drying procedure.

3. Toluene distillation - This is a distillation technique for removing moisture from a meat sample. The meat is placed in a flask equipped with a side-arm collection trap and a water condenser. Toluene is added to this glassware. As heat is applied the toluene and the water will distill off together in the vapor state. As the water and toluene vapor enter the water condenser, they are cooled and condensed. In the liquid state, toluene and water will not mix. Water is heavier than toluene so, consequently, it will settle on the bottom in the side-arm collection trap. The toluene will overflow this trap and flow back into the flask containing the meat. After approximately 2 hours all of the water will be distilled from the meat and collected in the side-arm trap. By knowing the original weight of the meat and the quantity of water collected, it is possible to calculate the percent moisture present in the meat sample.

Three fat analyses techniques are as follows:

1. Ether extraction - The ether extraction method of fat analysis normally follows the oven drying moisture method of analysis. The dried sample is transferred with the aid of ether into a paper extraction thimble. This thimble containing the dried meat is placed in a soxhlet extraction tube. Ether is added to this glassware arrangement and is heated in the lower flask. It is heated with a hot plate. The ether vapor rises through a tube into the cold water condenser at which stage it is changed to a liquid and drips down upon the sample. The either dissolves the fat from the meat sample. As the chamber containing the meat fills with ether, an overflow siphon tube is activated and the fat and ether are siphoned down into the lower chamber. The fat, having a much higher boiling point than the ether, will remain in this chamber but the ether will be re-cycled by boiling. Fat is, therefore, removed from the meat sample by washing with ether. The paper thimble containing the dried and extracted sample is removed from the extraction unit after 8 hours and placed in an oven to remove the solvent. The weight loss of the sample during the extraction process is considered fat. This loss in weight divided by the initial sample weight will give the percent fat for this analysis. If the initial weight of the meat sample was 10 grams, the dried weight was 4 grams and the extracted weight was 2 grams, the sample would have lost 2 grams (dried weight a minus extracted weight) during the extraction process. This loss in weight (2 grams) divided by the initial weight (10 grams) would yield a 20 percent fat content analysis for this particular meat product.

2. Babcock analysis - A meat sample is placed in the modified Babcock tube, and then hot water and acid are added. Acid with the aid of heat digests the meat protein, releases the fat molecule, and with the aid of additional water and centrifugation this fat is floated to the top of the liquid. More water is added and the fat is forced into the narrow calibrated neck of this bottle. After additional centrifugation and with the aid of dividers the fat content of this sample can be measured. This analysis requires approximately 60 minutes to complete.

3. Cooking analysis - A small meat pattie is weighed and made into a doughnut shape. This pattie is placed under a hot plate. A timer is activated and the hot plate cooks the meat pattie allowing the fat to drip through a grid, through a funnel, and then into a calibrated test tube. At the end of 15 minutes the heater is inactivated and the fat may be measured in the test tube.

The moisture and fat analyses described are relatively simple, and require a minimum of equipment to perform. All of these analyses will yield information about the uniformity and value of the meat product you are buying and selling.

Note: Ten colored slides representing product with variable fat content were shown to the audience. They were asked to estimate the fat content. The variation in the answers indicates the potential value of objective measurements.

Controls for Product Quality

Paul A. Goeser*

I think that I should say a word or two to verify comments that have been made up to this point. I can tell you from personal experience that Vern Cahill was not in that first meat class. Nor was Larry Kunkle in that meat class. I know positively that Larry was at Ohio State 35 years ago, though not as a meat instructor. Vern was in the meat classes shortly thereafter, and from that time on these individuals have been a very integral part of the Meat Science program here at Ohio State.

I doubt if you fully appreciate the amount of work that this group has done in terms of the meat that you and I now enjoy as we sit down at the table. I deliberately took time to get a few facts that may be of interest to you. Let's go back for the 50 years of Progress in Meat Science that is being celebrated since meat teaching began on this campus. First of all, there has been a 33 percent increase in the amount of meat eaten per person per year, 135 to 175 pounds. Second, the population has actually increased during that period of time by 75 percent. As a result the total production of meat in this country in that 50 year period has jumped from 14 billion to over 33 billion pounds of meat. Through the efforts of men like these and others in the industry we have more meat for each individual, a higher overall quality and greater variety. In addition, we spend a lower percentage of disposable income than in 1917 or any other year from 1917 to the present time. Now, if you want to give a bow to individuals for work well done, these men are worthy of our applause. There is one other point that should be made. I'm giving them a lot of credit here and I know it's right, but don't give them credit for this 75 percent increase in population; they didn't have much to do with that.

In order to move into the program, thinking in terms of quality assurance work and more primarily processing work that can be done as an adjunct to a quality control program, there are several points of general interest to be made. First, you will find that most companies today are very definitely concerned with their product's image in the market place. There was a time when this image reputation was almost entirely a

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reflection of the pride, the prestige or the name of an individual, a family or a locale. Every employee identified as an individual or collectively with the product and with the good name of that product. Since that time a slightly different situation has developed. Companies in business today may be so large and sometimes so diversified that an individual identifies only with a part of the production of the product. As a result this very close individual contact with the reputation or the image of that product does not exist as it did before. The result is that business today has developed quality assurance departments. These departments are assigned the responsibility to see that a program is developed which will protect the desired image of the product in themarket place. As far as Swift is concerned, the quality assurance department reports directly to the Vice President in charge of Research and Development. It is set up with six divisions. The first division has responsibility for actual laboratory and inspection personnel. The second is control analytical bacteriology and all environmental sanitation. The third, all processed meats, baby foods and all competitive evaluation on individual products. The fourth, controls analytical chemistry and work that has to do with the refinery, margarine, gelatine, chemicals for industries,adhesives, glue, by-products, and waste disposal. That seems like a large group for one individual. Actually there is an individual and an assistant in this division because it is a large group. The fifth, dairy and poultry and all supplies and the sixth, statistical evaluation, personnel training together with the fresh meats and the frozen meat program for quality assurance. I touched on these to begin with primarily for this reason. It is our opinion that, if a quality assurance program is to be meaningful, this department must set the program and all of the factors that have to do with effective administration of that program with the product manager of each product involved. It has to be developed in this manner if it is to function with any degree of commercial success.

There is a second point. If we are to have an effective quality assurance program, then, to the extent that it is possible, the processing of that product must be under control and the more automatic the process control, the less control quality assurance work on the finished product. There is much information available on setting up a quality assurance program. George Brissey, head of Swift & Company's quality assurance program, is widely versed in this field. However, this is not the area that I would like to discuss with you this afternoon. I would like instead to talk on the subject of process developments that can help the quality assurance program.

In some areas we're reasonably satisfied with our work. In some cases there are things that are not permitted by regulatory agencies we wish we could do differently but don't know how. These areas I wish to discuss may be classified under fat control, color preservation, freshness and condition control, tenderness control and shrinkage control. Now, suppose I indicate another rather general statement but one that is extremely important in a good quality assurance program. If a quality assurance program can reduce production cost there is added interest on the part of the product manager. Nothing is so effective in getting a quality assurance program going as to give this product manager more for his money than just the assurance of product quality itself. Now, that's making it just plain dollars and cents, but industry must make profits to stay in business.

The control of fat in meat and meat products is of concern both to the meat processor and to the consumer. In general the consumer desires a fat content as low as is consistent with good eating qualities. The processor wants his products to be as uniform in fat content as possible in order to produce as near to the desired fat specifications in the final product as processing techniques will allow without exceeding fat specifications. It has been demonstrated that a good fat control program will allow higher average fat content, thus lowering production costs and yet produce less product exceeding the specified fat limits.

There are numerous analytical methods for estimating fat content. The accuracy of most methods is more dependent on the sampling procedure than on the analytical method itself. In test work on boxed boneless beef we have shown that the variance attributable to chemical analysis (ether extract) will be approximately 0.35. Variance due to individual core borings or grab samples taken within the box will be approximately 9.0. Furthermore, within a given classification such as boneless cow meat, boneless trimmings, boneless frank and plate meat the variance due to the between-box variation will be approximately 2.25.

It is evident that from the above, our best control of fat in finished product is large batching and mixing or preformulation. In addition, a composite of numerous grab samples must be used for analysis. This has a serious drawback in products such as hamberger, pork sausage, and other comminuted but non-emulsified items where too much mixing will produce a smeared product undesirable in appearance. In addition, overmixing, particularly in hamberger patties, produces an undesirable,

rubbery, tough texture in the cooked hamburger patty. We have found that chopping through a cut mix does give more uniform fat-lean mixing in the entire batch than grinding through the grinder. Additionally, we have found that the ground or chopped beef at 34-36 degrees when passed through a Hollymatic machine will have a fat buildup on the knockout plates if the fat content gets above 30 percent. Thus, we have a built-in process fat control.

Gamma ray penetration, ultrasonics, and specific gravity methods offer possibilities for non-destructive fat analysis of an entire box of boneless beef. We have worked extensively with Minneapolis-Honeywell on a specific gravity method in which instrumentation is based on very accurate control of the weight, volume, temperature and type of meat. Preliminary commercial tests on 60 pound boxes of boneless beef indicate that this instrument is of the order of 2 to 2.50 as compared to the variance of 0.35 for chemical analysis. However, the error for sampling is now entirely eliminated. Because of the elimination of the sampling error we expect that the overall precision for estimating fat content by this procedure based on 95 percent confidence limits will be as follows:

1. For 5 boxes batched together X $\pm$ 1.5 or less
2. For 15 boxes batched together X $\pm$1.0 or less
3. For 100 boxes batched together X $\pm$0.5 or less
4. For 300 boxes batched together X $\pm$ 0.25 or less

Thus, by eliminating sampling error we may have a fat control program that commercially is as accurate as the ether extract analysis on a single small sample.

Fat control on meat cuts is a more difficult problem. There is no quick, sure way to guarantee outside fat thickness and control internal fat pockets in carcass meet, primal cuts, and retail cuts. The industry has a degree of control through selection of meat type animals. Certainly in this area the Animal Science divisions in the various colleges have contributed much to the production and identification of meatier carcasses. It is doubtful if consumers understand how much has been done for them. However, this is only a partial answer. Outside fat covering is not uniform in thickness. To date the physical trimming of fat to the desired level for sale is the best control and must be checked by quality assurance personnel. If we could just wish for a solution it might take the form of a fat sensing device attached to a planer head which could be passed over the outside of the carcass to remove fat to the desired thickness. Perhaps someone outside our field should be approached. Such an individual would not know that the problem could not be solved and therefore might come up with a solution.

For internal fat pockets and the excess fat covering over the dished, kidney shaped meat eye in the middle of the lumbar region there is no good answer. Remove the fat to the desired level and the meat cut becomes split or odd shaped. Cuts with excess fat can be packaged and discounted increasing the per pound price on other cuts to compensate for the discount; or all packages go into the display case hoping the customer selective processes will move all of them.

An effective fat control program has been developed in the case of sectioned and formed boneless hams and boneless turkey rolls. Here the individually trimmed muscles are recombined to give the effect of solid lean meat roasts or slices. This has been accomplished with considerable automation which has eliminated much of the lean trim loss and hand labor and provided the desired lean product at a minimum cost.

It must be remembered that since fat is a part of the original live animal purchased or carcass purchased any removal of fat which puts it in the category of a few cents a pound value as trimmed fat does decrease the yield of final boneless cuts, increasing the cost markedly. As an example, a Porterhouse steak at $1.00 a pound increases to $1.10 per pound with removal of just 1/8 inch of the outside fat covering.

A bright, fresh appearing color provides tremendous display appeal for fresh, frozen and processed meats. As of this date it is not possible when buying a live animal to know whether it will produce a dark cutter in beef or a pale, pink carcass in pork. There is no commercially satisfactory antemortem treatment of live animals to guarantee the desired bright color in the dressed carcass, though rapid chilling of pork has been indicated as a possible answer. The difficulty is to chill the entire carcass sufficiently rapidly to provide the desired color. In the case of beef it is known that the dressed warm carcass can be held at approximately 110 degrees Fahrenheit until the internal loin temperature reaches approximately 105 degrees and beef will have a lighter, brighter red color. It is not possible, however, at the time that the carcass is dressed out to know whether it will or will not be a dark cutter. Thus, to eliminate dark cutters the entire kill would have to be processed. This is not a commercially sound program. In addition, this process does make beef slightly softer in texture and does not have the approval of the Meat Inspection Service.

The appearance of surface fat covering on beef carcass is most desirable to the trade if the carcass is properly covered with a chill cloth

that controls moisture loss to less than one percent during the 24 hour chill period. If a completely moisture proof film is used on the hot carcass an unsatisfactory frosty white will develop in some areas after the film is removed. This is due to an original hydration of connective tissue while there is excess water present followed by drying of the tissue when the moisture proof film is removed, resulting in the frosty white areas.

Both beef and lamb carcasses given pasteurizing radiation dosages have an enhanced appearance on lean areas if stored in atmospheres having high oxygen levels for periods up to two weeks. Unfortunately there is a very rapid color deterioration as soon as the meat is removed from the high oxygen atmosphere. Thus control carcasses which had a less attractive appearance while the test carcasses were under oxygen showed a more attractive appearance than test carcasses one day removed from the oxygen atmosphere. It would seem that oxygen enrichment if used must be used throughout the entire merchandising cycle into the home.

To date the most effective control for maintaining fresh, bright color in beef, veal, pork and lamb is to chill to 30° F. and to hold at 29 1/2 to 30°F. This is a difficult assignment for the refrigeration engineer and commercially is not normally accomplished.

Vacuum packaging will provide a longer shelf life for fresh meat items and is used in the hotel, restaurant and institution trade. The problem here is the purple-red color of reduced myoglobin. Though accepted by the hotel, restaurant and institution trade this color has not been accepted at the retail level.

The transportation industry is active in the field of atmosphere control for shipping meat products. On shipping hauls up to four days test shipments have not indicated that the controlled atmosphere has protected the meat as to color and condition when compared with control product shipped in identical trailers or railroad cars. If extended shipments of six days to two weeks are anticipated, then the positive effect of the controlled atmosphere will be noticeable.

Ohio State's Deatherage, Cahill, Kunkle and others proved that antibiotics have a place in extending the storage life of fresh meat. In this case the control of bacteriological growth in extending the freshness life also extends the color life. However, the Meat Inspection Service does not permit the use of any preservative. Even the use of ascorbic acid and niacin, which might provide significant help in packaged fresh

and perhaps frozen meat, is not permitted. I am positive that research must provide more fundamental information on the chemistry of the enzyme and pigment systems of fresh meat before processing methods will provide the desired quality control.

It is generally agreed that quick frozen meats will have a bright fresh color. The industry has freezing techniques available in blast freezers, plate freezers, and cryogenic freezing to provide the desired color. It is also known that if product is stored at 0° or lower the bright color will be maintained. In the retail display case product is displayed under lights and generally with fluctuating temperatures at the surface of the meat cuts at the top of the display. Under these conditions meat packaged in transparent film will be discolored within a few days. The process and a quality assurance program that produced desirable packaged meats becomes ineffective because a more fixed color is required for display in present day cases.

Furthermore, unless the meat item has been vacuum packaged, there will be frost developed between the meat surface and the package film. Continued storage, especially in the fluctuating temperatures, will accentuate frost production. Weight loss due to frost formed within the package can amount to several percent. It is also known that meat vacuum packaged in oxygen impermeable film, even though bright and fresh when frozen, will become purple in color with prolonged storage even if the storage is in the dark. So we need the effect of vacuum packaging with oxygen permeability to keep good color.

Tenderness in meat is positively correlated with grade, and to the extent that this correlation exists a quality assurance program for tenderness can be tied to visual grading. This is not a completely effective program. Proper aging and ripening at various temperatures can be controlled and will produce more uniformly tender meat, particularly in the loin and the rib roasts and steaks. Equivalent tenderness in beef is secured with

1. 2 weeks at 34-36° F.
2. 5 to 6 days at 45° F.
3. 3 to 4 days at 55° F.
4. 2 days at 67° F.
5. 1 day at 110° F. (AMI test data).

Each of the above can be a commercially controlled process.

In the case of the pretendering process, a proteolytic enzyme is introduced into the animal just prior to the time that the animal is dispatched. This is the most effective tendering process for the entire carcass that we have in commercial use today. It has the built-in advantage of providing desired tenderness in good and choice beef, whether the carcasses are of the lean or fat end of either of the two grades. This, therefore, allows tenderness control and some degree of fat control.

More recently our fresh meat people have directed their efforts toward improving tenderness in special cuts from any carcass grade. A prototype machine and several commercial models have been produced for introducing an enzyme solution into the chilled meat through hollow needles. In this particular procedure a gas and an enzyme solution are introduced simultaneously to provide a more effective distribution of the enzyme solution within the meat tissue. Based on a rating scale of 1 to 10, statistical evaluation of the process indicates that a 2 point increase in tenderness on steaks of utility, commercial and good beef can be secured.

Tests indicate that better enzyme distribution can be achieved with this method than with a dip method or any other post-mortem tenderization process. Our first test work used air as a gas for the propellant. The oxygen in the air combined with the myoglobin in the meat produced a characteristic bright red beef color that was brighter than the color normally associated with the internal color of utility grade beef. As a result the process was not approved by the Meat Inspection Service of the U. S. Department of Agriculture, since the process made the product look as though it came from higher grading beef. As a result of this decision we changed from air to nitrogen. The nitrogen did not change the meat color but did provide the enzyme distribution that we desired. The process is now approved and in use commercially in numerous plants.

What about shrink control? Shrinkage control is a problem that has been with the industry for a long time and is likely to continue as a problem for many years to come. Shrinkage with fresh meat can be classified as chill shrink, holding cooler shrink, intransit shrink, and package shrink at the retail level. To date there is no commercial method for completely eliminating chill shrink. In the poultry industry this is accomplished through the use of ice slush in chilling the birds. However, this procedure is not approved for chilling carcasses of beef, lamb, veal, or pork. Moisture-proof materials such as plastic bags have

been used in an effort to eliminate chill shrink. Such packaging increases the chill time and, in addition, produces a somewhat undesirable surface condition. This results from the fact that a moisture-proof film holds lost water at the interface between the film and the surface of the carcass. This allows the connective tissue to take up water. When the protective film covering is removed and the surface of the carcass dries the connective tissue which had swelled when it was hydrated now dries producing a whitish, frosted appearance that is not considered desirable in the industry.

The introduction of a fog or atomization of water has provided some decrease in chill shrink. This addition of finely divided water particles into the refrigerated area works better in the holding cooler than in the chill cooler. Holding cooler shrinkages will vary around 1/4 percent per day depending on the temperature and relative humidity within the holding cooler. A well insulated tight holding cooler with some fog or water atomization system will maintain the holding cooler shrinkage at the lowest possible level. In some instances moisture-proof wrapping materials have been used. In such cases, it is necessary to calculate the costs of the wrapping material and the labor to place it on the carcass against the shrinkage to determine the commercial feasibility.

Intransit shrinkage is presently being researched by the various carriers who transport meat by rail or by truck. The use of liquid nitrogen as the refrigerant in meat cars is being widely tested. With nitrogen as the refrigerant, there would be less water removed from the surface of the carcass because there would be less air movement across the carcass and, therefore, less opportunity to move surface moisture to refrigerator coils. Test data on liquid nitrogen refrigeration has not to date clearly demonstrated that it will reduce intransit shrink.

Shrink at the retail level can be eliminated through the use of moisture-proof packaging materials. One problem remains. It is desired that the weight of the piece of meat as taken out of the package and free of any drip juice equal the original weight of the meat. Then our retail shrink problems are not entirely solved. In fact, shrinkage due to drip loss is difficult to control completely. The best control is achieved when the packages are displayed at closely controlled 29-30° temperatures without any stacking of the packages. For example, if four steak packages are placed one on top of the other in a display case for three days, the drip loss on the top package will be less than 1/2 of one percent while the drip loss on the bottom package will exceed 2 percent.

It is always a pleasure to visit Ohio State University. If the next fifty years give improvements equal to the past 50 years, our enjoyment from meat products will be great. Thank you.

Improving Performance with Retail Sales Forecasting

B. W. Marion

1968 OSU Meat Distribution Conference

The subject of forecasting sales and product movement is difficult to discuss without first placing it into prospective. As firms move in the direction of centralized distribution and cutting, of improved operations as a source of increased profit, and move toward the application of the computer to more of the problems within the firm, the need for sales forecasting becomes more apparent. Up to now sales forecasting has been something that has represented a "nice to do" type of activity, but has not really been viewed as essential to the retail operation. The trends that are evident now in the meat distribution industry suggest that this will become one of the most critical ingredients to improved meat operations.

However, efforts to predict sales and to developed improved retail operations will not take place overnight; nor are they the only problems that need attention. The host of decisions involved in a meat operation can be grouped into those relating to procurement, those concerned with the production operation and those that pertain to the merchandising function of the firm. In addition, there are decisions that relate to control and to measuring the progress of the firm in satisfying customers and in measuring the effectiveness with which the firm is operating.

Many of these decisions can be dealt with effectively if we use the power of the computer, our own experience and judgment, and if we employ a planned - systematic development of a management information system. Since sales forecasting, from my point of view, takes place rather late in the development of a total management information system, a few comments about such a system are warranted.

A Management Information System is intended to provide management with more comprehensive, accurate, and timely information on which to base their decisions. It also may automatically choose certain alternatives based upon the instructions that management has given to the system. Routine decisions such as establishing re-order points are particularly appropriate for automatic decision making by a Management Information System.

Thus, a Management Information System should free management of some routine decisions and provide better information on which to make the important ones. As we look into the future of food retailing, a great deal will depend upon the imagination and creativeness of a firm's management. A meat merchandiser who majors in minor decisions will cost his firm dearly in the long run. Thus, from my view point a management information system

allows easier and more effective handling of many routine decisions in production, procurement, merchandising, etc., but it's real pay off will be that it allows management to focus more attention on developing and stimulating their employees, and allows more time for creative and imaginative efforts on their own part. I am strongly convinced that this is the area that will distinguish between highly successful and unsuccessful firms in the future.

The development of a Management Information System does take time and needs to be carefully planned in order to achieve the desired and result. Figure 1 shows a suggested three stage development program for a Management Information System. As can be noted this system starts with the relatively simple and easy to obtain data and gradually builds on this data from one stage to another. For example, the data pool that is established in stage 1 provides the necessary information on which sales forecasting efforts will be made in stage 3.

If we can do a good job of predicting product movement, which means that we have defined those variables that have an important influence on sales, then we've gained the ability to plan much of our operation in advance. We're able to test advertising programs in advance, able to order product much more accurately, able to schedule production and labor in the store and able to test the effect of such things as changes in space allocation on product sales.

Sales and product forecasting is not an easy problem to undertake by any means. While we have made some efforts to predict sales here at Ohio State, at this point we are still not sure whether we can do it more accurately than the meat department manager located out on the firing line.

Forecasting efforts first start with defining the sales and the products that we want to forecast. With the host of products that we have in the meat department this means a selection of the more important and more critical ones. In our efforts we're focusing our attention first on the important fresh meat products; such as our beef primals, pork loins, and fryers. Whether we will get down to trying to forecast individual packer packaged items is at this point undecided. The processed and smoked products are not nearly as critical in their need for precise product forecasting.

We also need to look at this problem from an individual store standpoint. Since different stores respond in a different way to a give feature, attempts to forecast sales for several stores at once are not likely to lead to very accurate results. Thus, a store in a low income area may receive very little boost in sales from a beef rib sale, while the same sale would have a substantial impact on meat sales in a higher income store.

The most difficult aspect of forecasting is to determine those factors which influence sales and to determine the cause-effect relationship. As

we consider this subject there are several factors which we might list as having possible effect on department dollar sales or on the movement of and individual product. These include:

Department dollar sales
- Total store sales
- Meat features
- The features in other department
- The action of competition
- Season of the year
- Pay periods
- Bonus stamps or promotion

Product sales
- The intensity or "hotness" of the feature (includes both the price reduction and the amount of space in the ad).
- Substitution effect
- Competition's meat ad
- Season of the year
- Pay periods
- Display space (both quantity and location)
- Total store sales

If we find that the action of competition has a very significant effect on our sales and our product movement, then our chances of doing and accurate job of forecasting sales or product movement would appear rather dim. From some of our preliminary work in this area it appears that the effect of competition is not so strong as to make forecasting impractical. However, this may vary from market to market and firm to firm.

As far as the techniques used in forecasting it may suffice to summarize three basic approaches. The first is the moving approach which includes a simple moving average and also exponential smoothing. For some stores with relatively stable movement and without a significant effect from pay periods and seasonality, a moving average may work fairly well. Obviously, when this is used for product forecasting, the non-sales weeks must be separated out from the feature weeks for the different products. If there is a seasonal effect it may be possible to divide the year into quarters and forecast within the quarters. Moving averages do have the definite disadvantage of not being able to predict trends; so they are of little value for a firm that is steadily growing in sales or for one who may unfortunately be declining in sales. Thus, the moving average approach has some serious limitations, but may be appropriate for some products or some stores that are relatively stable in their movement.

The second approach uses statistical analysis, which is the approach we are using in our studies. The statistical approach has the strong advantage of being able to consider such factors as seasonality, the quantity of advertising space, amount of price reduction, the pay period, and the many other variables that we have previously listed and adjust for them in

a statistical manner. It indicates the relationship between these variables. However, one of the dangers is that it does not necessarily identify cause and effect. For example, in one of our computer runs we came out with store sales being most strongly related to a fresh ham feature in the meat department. Since we only had a fresh ham feature two or three times in a thirty-three week period, this appears highly questionable. Also, unless my experiences are atypical, a fresh ham feature is just not that hot.

From our analysis to date, the most important factors influencing product movement seem to be the price reduction of the primary feature and the amount of ad space devoted to that item. In other words, the total drawing power of the feature seems to be related to a combination of these two factors. There are many other interesting relationships showing up from our analysis. At this point, we're not sure whether some of these are incidental or a true cause-effect relationship. Our experiences to dat are encouraging but far from conclusive. The real test will come when we try to apply the predictive models that we come out with in a real situation.

The third method of forecasting is to use the department manager. If management can provide him with past movement records, and work with him to help him be more sensitive and aware of shifts in sales and shifts in product movement, and the causes for these shifts, a good meat department manager may be able to do this job more accurately than anyone else.

This is a brief summary of where we are in our sales forecasting work. I regret that we are unable to provide you with very many definite answers of the best way. Rather, I've tried to indicate some of those factors which must be considered, where sales forecasting fits into a total management information system, and some of the procedures you may want to follow in attempting to forecast sales.

Proposed Three-Stage Development of a Management Information System

Stage	Development Activities	Additional Capabilities of System At End Of This Stage
I	Develop a comprehensive control system that summarizes past action and results	• Generate weekly information on the sales, cost of goods sold, and gross profit for individual stores, departments, commodity groups or products. • Summarize competitive actions such as features. • Accumulate pertinent information into a "data bank" for recall or future analysis.
II	Develop production relationships and incorporate into an expanded control system. Develop an elementary procurement model.	• Generate information as in Stage I, modified by production costs to give contribution profit (sales minus cost of merchandise and variable costs.) • Compute expected man-hours and labor costs by store and department and compare actual with expected. • Generate optimum procurement methods, based upon alternative raw product forms and costs, cutting tests, and labor and material costs.
III	Develop predictive models for store, department, and product sales and incorporate to provide a coordinate planning and control system. Develop advanced decision models.	• Generate forecast of product and department sales and determine optimum schedule of deliveries, production, and labor, and optimum cutting and merchandising methods. • Compare results of alternative pricing and promotion programs.

Figure I

Pricing Accuracy on Carcass Beef

P. R. Thomas*

In our discussion today I want to share with you the results of research conducted here at Ohio State University by the Department of Agricultural Economics and Rural Sociology, during 1966 and 1967. One of the objectives of the study was the evaluation of pricing efficiency for marketing live animals where price is based on carcass cutability and grade. The actual sale price for several individual carcasses will be compared with the estimated "true" value of the carcasses.

The other objective which we will discuss is the ability of livestock buyers to correctly estimate the live weight value of slaughter cattle. In this study data were collected on 766 head of cattle. Some of the cattle were purchased in groups while others were purchased individually through auctions.

This study was unique in the following way: buyer estimates of cutability grade of live animals were compared with the actual carcass performance, and the actual sale price for individual carcasses was compared with the estimated "true" value of the carcasses.

I suspect at this point a brief explanation of cutability grades should be given.

In June of 1965 the Consumer and Marketing Service of the U. S. Department of Agriculture published a new set of standards for grades of carcass beef. In these standards they talked about the two general considerations, one being the palatability--indicating the characteristics of the lean and confirmation or generally referred to as the quality grades, the prime, choice, and good. The other consideration in describing carcasses was the indicated percent of trim, boneless major retail cuts to be derived from a carcass or sometimes referred to as cutability grade or, yield grade. Yield grades give an accurate index of the amount of

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salable beef that can be cut from a carcass. There are five grades, ranging from yield grade one which indicates the highest yield grade to yield grade five, the lowest. Yield grades are based on four factors, thickness of fat over the rib-eye and the area of rib-eye muscle, the amount of kidney and internal fat, and the carcass weight. These are closely related to the amount of meat that a carcass will yield.

In measuring the rib-eye, measurements were made to one-tenth of an inch with process being accomplished following the carcass being ribbed at the twelfth thoracic vertebra. In measuring the amount of external fat, measurements were obtained at least to one-tenth of an inch, and occasionally to one-hundredth of an inch, such as .25, .45, etc. The amount of external fat on a carcass was evaluated in terms of the thickness of this fat over the rib-eye muscle measured perpendicular to the outside surface at a point three-fourths of the length of the rib-eye from its chine bone end. Where the outside edge of fat cover along the loin eye was very irregular, a measurement was taken which reflected the average outside measurement without extreme irregularities.

Some of the results of this study are presented on the following tables.

In studying the accuracy of buyers in estimating the value of slaughter cattle as they are purchased through auctions and from feedlots, the data collected indicate that it is impossible for buyers to be very accurate. (Table 1)

As a result of not being able to see through the hide of an animal and know accurately how much an animal will dress, what the loin eye size of the animal is, the extent of fat thickness on the carcass, etc., buyers are naturally conservative in their estimates. This conservative tendency is reflected in the data collected and presented.

The data which compared estimated dressing percent and actual dressing percentage showed that buyers tended to underestimate animals purchased individually as well as animals purchased in lots. It is recognized that buyers were more accurate in estimations of animals purchased in lots, and this is likely a result of the tendency to "average out" on a lot and other factors. For instance, the buyer probably had more time to look at the animals when making a purchase from a feedlot than when purchasing an animal at an auction. The buyer's past experience with animals from a given feedlot may also result in his having more knowledge about the capabilities of a group of cattle.

The data also indicate that when buyers were estimating the federal grade of animals, they tended to overestimate the number of choice carcasses and underestimate the number of prime and good carcasses. (Table 2)

The same trend continued when buyers were estimating cutability grade in that they tended to overestimate the number of animals which would have a cutability grade of 3 while underestimating the number of animals which in fact had other cutability scores. This was true both in the case of purchases of individual animals and in the purchases of animals in lots. (Table 3)

Comparison Between Carcass Sale Price & Computed Value

The method of arriving at the computed value is explained through the following steps. First assume that the cutability grade of 2.5 is average and note from Table 5 that the yield of cuts for the cutability grade of 2.5 is 51.2 percent. Next the wholesale price divided by the yield of cuts will give the retail value of the major boneless cuts.

Recognize that the retail yield which reflects the four major cuts, round, loin, rib and chuck, do not represent all of the retail value of a carcass. It is estimated that these cuts do represent about 90 percent of the retail value of a carcass and, therefore, it is an excellent measure of cutability. The other 10 percent will not likely differ much among various carcasses and, therefore, is ignored.

In summary, what does this discussion mean? I think first of all that we need to recognize that perhaps there is more difference or more variation among carcasses than we had thought, (Table 4) or that in terms of the amount of salable product we get from carcass versus another the significance is greater than we had possibly noted. To retailers certainly this means that you must be more concerned as to what kind of carcass you buy. In many cases we find that you could buy a choice two steer out of a cooler presently for the same price as a choice five steer.

Packers can benefit by recognizing the differences in carcasses and then trying to adjust their buying procedure so that they are buying the better carcasses. I think we need to recognize that most of our buyers who have been trying to guess what kind of carcass a live animal will yield have also been so used to looking at over-finished animals that it is going to take effort to readjust their thinking and even then they're still going to be making some rough estimates. So here is the

problem of trying to retrain buyers and possibly give some additional emphasis to a system that pays for the cattle on a basis of carcass grade and weight. The packer can also use this relatively new system of quality grade and cutability grade of carcasses for merchandising to the retailer.

For the retailer as he buys carcasses he needs to note a difference in value among carcasses and then he may see why he can pay more for carcasses that have the high cutability grade rather than those of the low cutability grade.

John C. Pierce, the director of the Livestock Division of the Consumer and Marketing Service makes the following statements regarding the new grading system: "The stakes are high and the whole industry should benefit from greater recognition of cutability differences. The producer of high quality meat-type cattle should receive the financial incentive to increase his production. Yield grades offer the marketing agency the distinct opportunity to render a more professional service to producers--to obtain for them prices more commensurate with the actual market value of their cattle. Yield grades offer the packer an opportunity to market beef nationally with a more precise identification--reducing, and perhaps eliminating, buyer rejections due to a lack of product identification. Yield grades enable the retailer to buy a more precisely identified product, and to broaden his range of acceptance through the use of appropriate price differentials, rather than narrowing the range through restrictive private specifications. Yield grades offer the consumer the potential of lower cost beef through reductions in marketing costs and the production of greater quantities of salable meat."

A retailer sees the advantages of yield grades as follows:

Says Mr. J., "At today's prices, I've found that a USDA Choice Yield Grade 2 carcass is worth about $42 more than a USDA Choice Yield Grade 4."

He explains it like this: Currently USDA Choice, 600 pound carcasses sell for about $40 per hundredweight, or $240 a piece. USDA figures show that at this price level the difference in value between Choice carcasses of adjacent yield grades--based on differences in yield of salable meat--is about $3.50 per hundredweight. The value difference between a Yield Grade 2 and Yield Grade 4, therefore, would be $7.00 per hundredweight, or a total of $42 for 600 pound carcasses.

"In an operation like mine," Mr. J. says, "it's not hard to see what this can mean in savings. I have found that value differences of $40 between USDA Choice carcasses are not unusual, and differences of $25 to $30 are quite common. So I buy to take advantage of this fact. Then, too, purchasing yield graded carcasses enables me to figure exactly how much meat I'll be able to cut from each carcass, how many to buy, and what my average cost will be per hundred pounds of retail cuts. And I don't have to do all that trimming I used to do."

"I suppose," he continues, "that before long packers will be pricing beef carcasses more in line with their actual value--and I will have to pay more than the $1.00 per hundredweight premium I now pay for those with a higher yield. In other words, I will be paying exactly what each carcass is worth. But I'll still have the advantage of knowing just how much meat I can expect to cut from each carcass and be able to figure my costs accurately."

ESTIMATED AND ACTUAL VARIATIONS
IN CARCASS VALUE AMONG SELECTED CATTLE
OHIO, 1966

Live Price	Weights: Live	Weights: Hot Carcass - 3%	Dressing Percentage: Hot minus 3% Est.	Dressing Percentage: Hot minus 3% Act.	Dressing Percentage: Chilled Percent	Grade: Est.	Grade: Act.
27.00	1030	596	59.5	57.9	-----	C-3	C-3.1
26.50	1035	619	59	59.8	61.0	C-3	G-2.5
26.10	1015	613	59	60.4	61.5	C-3	P-1.5
27.80	1000	600	60.5	60.0	60.8	C-3	P-3.3
27.70	1015	612	60.5	60.3	61.3	C-3	C-3.4
28.90	1010	607	59	60.1	59.2	P-3	C-5.0
27.40	1025	631	61	61.6	-----	C-2	C-2.6
25.75	955	587	60	61.5	62.8	C-3	C-3.8
25.90	1045	656	62.5	62.8	64.2	C-3	G-3.5
26.30	1000	631	62	63.1	64.2	C-3	C-1.6
25.80	1010	613	63	60.7	-----	C-2	G-2.1

Comparison Between Actual & Estimated
Carcass Grade for 235 Fed Cattle 1966
Classified by U. S. Carcass Grades

	Carcass Grade Buyer Estimates		Carcass Grade Federal Grader	
Grade	Number	Percent	Number	Percent
Prime	5	2.13	17	7.24
Choice	192	81.70	163	69.36
Good	38	16.17	55	23.40
Total	235	100.00%	235	100.00%

Source: Original data.

Comparison Between Measured
And Estimated Cutability Grade For
209 Fed Cattle

	Cutability Grade Live Estimates		Cutability Grade Carcass Measurement	
Cutability Grade	Number	Percent	Number	Percent
1	0	0	7	3.35
2	48	22.97	74	33.89
3	159	76.08	106	50.72
4	2	.96	21	10.05
5	0	0	1	.48
Total	209	100.00	209	100.00

Source: Original data.

VARIATIONS IN CUTABILITY

GRADE AMONG SELECTED CATTLE, OHIO, 1966

Live Weight	Carcass Weight	Quality Grade	Fat Thickness	Preliminary Cutability Grade	Area of Ribeye	Cutability Grade
1030	614	Choice	.55	3.3	11.6	3.1
1035	638	Good	.35	2.8	12.4	2.5
1015	632	Prime	.4	3.0	16.0	1.5
1000	619	Prime	.5	3.2	10.9	3.3
1015	631	Choice	.5	3.2	10.7	3.4
1010	626	Choice	1.05	4.6	10.0	5.0
1025	650	Choice	.3	2.7	12.3	2.6
955	605	Choice	.6	3.5	9.5	3.8
1045	676	Good	.6	3.5	11.8	3.5
1000	650	Choice	.35	2.8	15.2	1.6
1010	632	Good	.2	2.5	12.9	2.1

PERCENT YIELD OF BONELESS MAJOR CUTS FOR CORRESPONDING YIELD GRADES

YIELD GRADE	YIELD* OF CUTS	YIELD GRADE	YIELD OF CUTS
1.0	54.6	3.5	48.9
1.5	53.5	4.0	47.7
2.0	52.3	4.5	46.6
2.5	51.2	5.0	45.4
3.0	50.0	5.5	44.3

*Percent of carcass weight in boneless, closely trimmed, retail cuts from round, loin, rib and chuck.

METHOD OF ARRIVING AT COMPUTED VALUE

Assume Cutability Grade 2.5 is Average

Cutability Grade 2.5 = 51.2 Yield of Cuts

$$\frac{\text{Wholesale Price}}{\text{Yield of Cuts}} \times 100 = \text{Retail value of major boneless cuts}$$

$$\frac{45¢}{51.2} \times 100 = 88¢$$

Cutability Grade	Yield of Cuts	Retail Value		Computed Wholesale Price
1	54.6	88¢	=	48¢
2	52.3	88¢	=	46
3	50.0	88¢	=	44
4	47.7	88¢	=	42
5	45.4	88¢	=	40

COMPARISON BETWEEN CARCASS
SALE PRICE AND COMPUTED VALUE

Actual Grade	Sale Price	Computed Value
C-3.1	46	44.7
G-2.5	45	45.0
P-1.5	46	47.9
P-3.3	46	44.3
C-3.4	46	44.1
C-5.0	47	42.6
C-2.6	48	47.8
C-3.8	44.5	41.9
G-3.5	44	42.1
C-1.6	44	45.78
G-2.1	44	44.75

VARIATION BETWEEN STEERS OF
SAME WEIGHT AND QUALITY GRADE

Characteristics	Steer A	Steer B
Live Weight	1,010 lbs.	1,015 lbs.
Live grade	Choice	Choice
Dressing %	62.0	62.0
Carcass Weight	626 lbs.	632 lbs.
Carcass Grade	Choice	Choice
Rib-eye Area	10.0 sq. ins.	15.2 sq. ins.
Fat thickness	1.05 ins.	.4 ins.
Cutablility Grade	5.0 1/	1.5 1/
Yield of Boneless Major Cuts	45.4%	53.5%
Computed Wholesale Price	40 ¢	47 ¢
Wholesale Value	$250.40	$297.04
Difference	$46.64	

1/ Thus these carcasses would be referred to as Choice -5 (steer A) and Choice -1 (steer B) carcasses.

Paul R. Thomas
5/8/68

RETAIL SALES VALUE COMPARISONS OF 600-POUND
CHOICE GRADE BEEF CARCASSES*
January 1968

	2	3	4
Percentage of carcass weight in retail cuts	77.4%	72.8%	68.2%
Retail sales value per cwt. of carcass	$69.16	$65.55	$61.94

*These values reflect differences in the percentage of retail cuts and carcasses at the mid-point of Yield Grades 2,3,and 4. Values are calculated from prices furnished to the Marketing Economics Division of the Economic Research Service by a large number of selected retailers throughout the country.

BEEF--YIELD GRADED
BY THE U. S. DEPARTMENT OF AGRICULTURE
February 11 - March 9, 1968

Quality Grade	YIELD GRADE					
	1	2	3	4	5	Total
	Thous. Pounds					
Prime	24	1,297	4,203	147	23	5,694
Choice	390	33,106	82,454	1,319	139	117,408
Good	246	7,206	3,834	25	1	11,312
Standard	6	73	2	1	--	82
Commercial	--	6	7	1	--	14
Utility	1	4	2	--	--	6
Quality not identified	54	4,143	5,086	56	1	9,340
Total	721	45,835	95,589	1,548	163	143,856

Merchandising--A Key to Profits

Monte R. Flett and B. D. VanStavern*

"What is merchandising?" If we were to ask each of you this question we would get a wide variety of answers--all of them correct. These answers would depend, for the most part, on your specific responsibilities, experiences and objectives.

In a group as diverse as this, with all kinds of meat operations from single stores with service cases to large chains with central warehouses, it would be naive for us to propose a single method of merchandising. Rather, we would like to illustrate, using a diamond cut beef round, some key merchandising principles. The way these principles may be applied will vary as much as the stores represented and the personalities involved.

The principles we hope to illustrate include:

1. Merchandising effectiveness is improved when a single cut is presented in a variety of forms.

2. Merchandising effectiveness is improved when there is a selection in size of retail cuts available.

3. Merchandising effectiveness is improved when there is a variety of cuts appropriate to different cooking methods.

4. Merchandising effectiveness is improved when there is a selection of cuts to suggest menu variety.

5. Merchandising effectiveness is improved when your store offers the unusual or different cut.

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* Director, Merchandising Department, National Livestock and Meat Board and Extension Meat Specialist, The Ohio State University, respectively.

6. Merchandising effectiveness is improved when merchandising techniques and procedures are timely and variable enough to appeal to the needs or wants of prospective customers and when they encourage proper usage to assure satisfaction.

These ideas certainly are not new. Some of the cuts we have made from this diamond round may not appeal to you at all. It is not these cuts we want you to think about. It is, rather, the concept that there is always more than one way to cut and merchandise meat. Many of these haven't yet been tried---. We encourage you to think about this--maybe next year's session will be entitled "New Merchandising Ideas I Have Developed and Used."

NOTE: Mr. Flett presented each workshop participant a kit of merchandising information developed by the National Livestock and Meat Board and asked for suggestions, at all times, on ways the Board could better serve the industry. A catalogue of publications is available from the National Livestock and Meat Board, 36 South Wabash Avenue, Chicago, Illinois , 60603.

What's New in a Saw-ready Meat Program

Michael Davis*

The subject of this presentation "What's New in a Saw-ready Meat Program" uses the word new which connotes among other things refreshed, regenerated, or recently manifested. Before we get into what's new, then, it is only appropriate to review what's old, in order to establish a point of reference and have a basis for comparison. Let's divide the subject into three parts: first, let's take a look at where we have been, which will bring us to where we are today and point us squarely to where we are going, particular with beef in the meat industry.

During the early or middle 1920's the secrets of sausage and luncheon meat manufacturing were controlled by individual sausage makers and the supply of these skilled technicians in the United States was critical. These specialists had to be imported to this country from Europe especially Germany where they were in abundance. From this nucleous of skilled workers and the apparent need for more variation in meat such as sausage and luncheon meats, progress was swift over the years until today we have many new flavors and designs economically manufactured and presented to the consumer in a very eye appealing sanitary manner.

Another dramatic change in the meat industry was the transition in the curing process of hams. At the beginning ham had to be cured four days to the pound and the average ham would be tied up in the curing process for approximately sixty days. The real significant advancement in the sophistication of ham curing came about through the discovery by Harry Lavin of "Prague salt" which was mined in Prague or then called Czechoslovakia. Harry Lavin, by the way, founded Sugardale Foods in 1919. The discovery of Prague salt brought about dramatic change in packer need to inventory hams for such a long period of time and reduced this sixty day process to seven days. The regular skin-on hams evolved to the skinless shankless, the semi-boneless, and currently much progress is being made in the completely boneless and portion ham categories.

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* Fresh Meat Director, Sugardale Provision Company, Canton, Ohio.

I happen to recall vividly the introduction of semi-boneless hams about ten years ago and the difficulty of presenting this fine product to an industry that was satisfied with the old ham. The standard objection was--no facts please--I am already convinced.

Fresh pork went from the dressed hog shipped directly to the retailer who usually rendered the fat on the premises; to the cut, wrapped and boxed parts of pork we know today. Most meat cutters today would not be able to cope with a dressed hog or a side of pork. Improvement in feeding and breeding of hogs brought us where we are now with a high yielding desirable meat type animal.

The retail food industry kept pace with the last fifty years of sophistication and technical change. Also, the retail stores evolved from poorly refrigerated inefficient service type stores to clean, efficient, self-service superettes and supermarkets.

Now back to beef! The cattle raising industry also made gigantic strides through modern feeding and breeding techniques over the years to where we now have a high yielding very desirable beef cattle. Since it is not within the realm of possibility to breed out waste and problematic parts of this fine beef animal. A better usage of this animal has been needed for many years. However, and let me apologize, we as packers hesitated to tackle such a large project until recently. We have been shipping this dressed carcass to the retailer almost the same way our grandfathers received their beef. If you will notice on the slide that a 1000 pound steer is not all beef and beef is not all steak and roasts and that the 590 pound dressed carcass that is generated by a 1000 pound live steer only yields about 465 pounds in retail cuts and about one-third of the 590 pounds requires an excessive amount of labor not to mention the 125 pounds of bone and fat that is shipped to the retailer, labored over, stored in a holding cooler growing excessive bacteria and finally sold as inedible scrap for about one-fortieth of the amount the retailer originally paid for.

And here we are today--back to my original subject: "What's New with a Saw-ready Meat Program." For the next 13 minutes let's view a film telling us about saw-ready beef, which by the way is a registered name of Sugardale.

One quick comment: The quality of saw ready beef by far surpasses the quality of the movie you've just seen but the movie does show the mechanics of the new way for beef. The photograph on the screen now shows all the parts from one side of beef. Across the bottom of the photo are the saw ready parts and the bones and fat behind the saw ready pieces are the parts removed. This next photo shows the 7 parts of a now saw ready side vacuum packaged. Since this movie was made, we have improved the box which is now shown on the screen, ready for shipment to the new breed of meat retailers.

With your cooperation, then, and with the assistance of Bill Swanson let's analyze this new product and see how it shapes up for profit at the retail store. In order to establish a common understanding of the modern way to analyze retail beef profits by cwt., allow me to switch from beef and let's go to boiled ham and bologna. As you see on the screen and hypothetically, 100 pounds of bologna at 30 cents per pound costs $30.00, let's assume that we sell 100 percent of this bologna or all of it at 49 cents per pound which puts $49.00 in our cash register. The old way to analyze this profit was to divide the cash register money or $49.00 into the profit which was $19.00; as you can quickly see this brings 38.7 percent gross profit. Dreaming on then, let's do the same thing with boiled ham at 75 cents per pound. One hundred pounds costs $75.00 and sell all of this boiled ham for 99 cents per pound returning a total of $99.00, the percent of gross profit on the ham then is 24.2 percent or substantially less than the gross profit on the bologna--38.7 percent. The dramatic difference in the two percents would certainly motivate the retailer toward allocating a priority to the bologna, but let's take another look. The one hundred pounds of bologna generated $19.00 in total gross profit but the ham generated $24.00 in total gross profit, hence the reason that the meat industry switched to the cwt. concept in analyzing profits.

With your help and as quickly as possible, and be our guest by utilizing the sales analysis forms each of you were given and record the results we get here for future use. The saw ready carcass has been separated into nineteen categories and a composite percent to the total has been established on a very basic cutting style with no fancy boneless high-priced items considered. These percentages were arrived at by retail cutting and analysis of ten separate choice cattle to arrive at a good average or composite. By utilizing the time saw ready beef affords, the retailer has the ability to work smarter generating a higher per man hour productivity with his meat department labor. By making more sophisticated retail cuts, boneless and appealing to the young consumer of the day, enhances the profit and builds the constantly sought after consumer franchise. On the cutting test then, Gentlemen! Let's assume we have a 400 pound saw ready carcass which

would have been made from a 600 pound plus regular carcass. At the top of your page adjacent to the word grade, log in choice, log in 400 pounds for the weight, log in _____ for the cost cwt. Permit me to clarify the validity of multiplying percent times selling price to obtain the cwt. return or sales value. The first retail item is arm cut roast which is 4.5 percent of the total saw ready carcass to 18 pounds, now let's sell the arm cut roast for 85 cents per pound. By multiplying the 18.4 pounds by the 85 cents we realize a total return of $15.30. Now let's multiply the percent, which is 4.5 by the retail price which is 85 cents resulting in $3.83. Dealing then with this same 400 pound saw ready beef you can quickly see we have four increments of 100 pounds each. Since $3.83 is the cwt. return by multiplying 4 times 3.83 we again get $15.30 which validates our system.

I'll ask your cooperation from here on in, gentlemen, for suggested retail prices and quickly complete this sales analysis.

On your forms adjacent to arm cut roast log in 85 cents in the test selling price column and 3.83 in the sales value column.

On the second item. Who will volunteer a retail price for the English cut roast_____That's fine. By multiplying this times 8.1, which is the percent of English cut roast the sales value is _____.

Third item--blade cut roast. What will we sell this item for_____. That's fine, now by multiplying 7.3, which is the percent of blade cut roast... the sales value is _____.

Fourth item--center cut roast. What will be the selling price for this item_____. That's fine, now by multiplying 6.5, which is the percent of center cut roast...the sales value is _____.

Fifth item--deluxe short rib. What will we sell this item for_____. That's fine, now by multiplying 1.4, which is the percent of deluxe short ribs, the sales value is_____.

Sixth item--rib steaks. What will we sell this item for_____. That's fine, now by multiplying 8.2 which is the percent of rib steaks, the sales value is_____.

Seventh item--round steak. What will we sell this item for_____. That's fine, now by multiplying 10.4, which is the percent of round steak, the sales value is_____.

Eighth item--boneless rump roast. What will we sell this item for _____. That's fine, now by multiplying 3.7, which is the percent of boneless rump roast, the sales value is _____.

Ninth item--heel of round. What will we sell this item for_____. That's fine, now by multiplying 2.3, which is the percent of heel of round, the sales value is_____.

Tenth item--sirloin steak. What will we sell this item for_____. That's fine, now by multiplying 6.7, which is the percent of sirloin steak, the sales value is _____.

Eleventh item--porterhouse steak. What will we sell this item for _____. That's fine, now by multiplying 5.2, which is the percent of porterhouse steak, the sales value is_____.

Twelfth item....T-bone steak. What will we sell this item for_____. That's fine, now by multiplying 4.4, which is the percent of T-bone steak, the sales value is _____.

Thirteenth item--sirloin tip steak. What will we sell this item for_____. That's fine, now by multiplying 4.1, which is the percent of sirloin tip steak, the sales value is _____.

Fourteenth item--beef stew. What will we sell this item for_____. That's fine, now by multiplying 6.1, which is the percent of beef stew, the sales value is _____.

Fifteenth item--trimmings. What will we sell this item for _____. That's fine, now by multiplying 11.0, which is the percent of trimmings, the sales value is_____.

Sixteenth item--soup bone. What will we sell this item for_____. That's fine, now by multiplying 1.9, which is the percent of soup bone, the sales value is _____.

Seventeenth item....bone. Since the value is nil and the cost to handle this item is high, we will assign no value to it.

Eighteenth item--fat. This item is clean and edible. It will be utilized in store-made ground beef. Let's make an 80 percent lean and 20 percent fat ground beef and allocate the fat one-fifth or 20 percent of the ground beef value which is _____or_____for the fat. By multiplying the percent of fat times _____we generate cwt.

Ninteenth item--cutting loss. This, of course, has no value.

The total return on this 400 pounds of saw ready beef is _____ cwt. The current cost of saw ready beef is _____. The D.P.H., which means dollars per hundred margin, is the difference between the total return and the cost which is_____. By dividing the total return into the D.P.H. we have a percent of _____.

What you have seen and heard so far relates to where we have been with beef, brings us to where we are, and clearly and squarely points us to where we are going. The concept of saw ready beef is no longer conjecture or a possible solution to beef handling, in fact, this is the accepted path that we as an industry will travel.

Sanitation and the new government involvement, designed to protect the consumer, locks in the concept of sub-primals or saw ready beef. It is and has been a way of life to operate inefficient retail cutting rooms in a state of sanitation that leaves much to be desired. This must and will change! The retailers that recognize this fact and take productive, corrective measures will be the new leaders in the meat business. As a change of pace and in line with sanitation allow me to tell a quick story:

"A meat supervisor was holding a sanitation meeting with one of his supermarkets. The supervisor had reviewed poor sanitation and its effect on shelf life of retail packages for ten or fifteen minutes. He expounded to some length on the benefits derived from keeping clean hands and insisted that the meat cutters wash their hands frequently during the working day and without fail after using the men's room. The meeting ended and the back to work signal was given; at which time one of the meat cutters promptly visited the men's room and in a matter of seconds emerged. The supervisor asked him if he had washed his hands. His reply was 'No, I didn't have to, I'm <u>not</u> going to cut meat now, I'm going to lunch!'

There is an obligation to point out some pitfalls of this new meat product and some new retailer managerial responsibilities. Scheduling of work and work habits must be reviewed and revised since the breaking of beef and the early in the week trimming of regular carcass beef is eliminated. This new product gives you the opportunity to work smarter and included in this ability is additional merchandising time. Retail cases should be adequately stocked at all times with fresh product and each inch of display area utilized. There is a law commonly used in the

meat industry called "Parkinson's Law" which means that when a person is confronted with product that enables him to work slower or relieves work pressures an immediate adjustment is accomplished and since this product saves about half the labor as compared to regular product additional coffee breaks and non-productive discussion periods can easily use up this saved labor. Proper management and programming is the retailer's responsibility.

Procedures for Handling Saw-ready Beef

1. Keep a clean sanitary cooler, cutting room, and meat cutting department.

2. Receiving of saw-ready beef:
   - check the order carefully against the receiving slip on delivery.
   - no credit for shortages will be honored after the driver has left.

3. Saw ready beef is fragile. Handle boxes with reasonable care. If any boxes are broken or smashed on delivery inspect the beef and use it immediately if the package is broken or vacuum lost.

4. Separate and stack the saw ready beef cartons in your holding cooler on floor racks and/or pallets with identification on the outside.

5. Rotate your stock with minimum of handling.

6. Do not hang saw ready beef on hooks.

7. Keep the fat you trim from saw ready beef in clean luggers. This fat is edible and should be utilized in your ground beef operation.

8. Check your cooler temperature twice daily. Remember life (of all meat products) begins at forty degrees.

9. Inventory--the pressure sensitive white identification label on the end of each saw ready box shows the weight recorded in tenths of a pound. This insures simple inventory control.

10. Take weekly retail cutting tests. Your Sugardale sales representative will furnish you printed cutting test forms on request.

Sales and Profit Analysis

Thomas Riedhart*

I am sorry, Mr. Walter Glaub, who intended to present his story--a very fabulous story of success--was not able to attend this meeting today. His is a story of success based on facts--not theory. Sales and profits were the two problems he successfully mastered. His story is similar to many, with one difference. He was interested in improving his operation. He was interested in today's need of establishing a better meat merchandising program for more sales and more profits and also he was willing to make the change. Also provide the cooperation and follow through necessary to make the change successful. Several years ago we at Food Marketing were called in by Mr. Glaub, and his brother, Chuck, to analyze their operation, because for many years, according to Mr. Glaub, their operation was pretty much a hit or miss program--in pricing, in sale items, in merchandising, and in techniques in buying; but, now the need for a change was apparent. New competition was rumored to be moving in--a competitor with a reputation of having a very knowledgeable meat operation. This new supermarket would have approximately 20,000 square feet of selling area, and would also provide a customer service operation. The size of this new business would be comparable to Mr. Glaub's store; the only difference being Walt's was a self-service market. This, plus an already established chain unit in a city of 7,000 people would create a very highly competitive situation for survival of the fitest.

Mr. Glaub knew his present meat operation, grosing about $4,900 a week in sales and approximately 16 percent gross profit, just could not stand much more pressure from losses due to the extensive costs of selling loss leaders, but mostly he was concerned about the hit or miss internal operation of his meat department.

Too many times operations without management records, records of sales, cutting tests, sales mix, special ad markdowns, ordering guides, cooler rotation, case management, etc. is on its way to where? In today's competition, a market soon loses out and finally closes, from the lack of guide lines in sales, and profit control records; it never really gains its true potential, as a sales and profit organization,its origin had really intended.

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By the show of faces here today it proves there is a growing need and a significant trend in our thinking--thinking about the need for a greater control in retail meat gross profits and sales management, and the need to strive for a better balance of profit and sales while remaining competitive.

Now why should we look at the meat department's operational potential? Why the meat department in particular? Why in the sales and gross profit? And, why now? Because, with virtually every department in the store vying for extra sales and profits, there exists a real need for new evaluations in the sales and profit possibilities to create and handle not only today's meat business, but the needs of the future as well. The rapidly growing number of discount stores with interior supermarkets is an indication of this need. These units are reporting substantial weekly sales through their food outlets at lower grosses than obtained by their local competition. So, how high should grosses be or how low can we afford, and above all how can we be sure we are getting what we have to realize in gross profit to stay in business and still be competitive. With computers coming more and more into the picture, there exists a need for more information about meat department operation. Records must be kept and averages established on fact rather than theory. Therefore, one of the most important items in retail meat gross profits, is the vital relationship of sales mix to profit. This interplay requires a continual balance to sales mix. The critical point here is that even with an increase in sales in the market, a drop in mix can reduce profits or even result in losses.

I have with me today two meat ads we ran several years ago in Mr. Glaub's market, mostly to clarify the importance of mix and also to clarify the reasons for the up and down in sales and profit.

In the first ad, a steak sale, we ran steaks at competitive prices. It was a good ad and a good sale--the sales were up. Tonnage for this ad was 13,451 pounds; the sales were $7,029, gross profit 21 percent, or $1,489.91. The sales cost in retail mark downs was $939.76, or 13.4 percent of retail sales. Now by adding your mark down to sales and to profit, then dividing sales into profit, you have a going in gross of 30.9 percent. This proves out a very good operation with apparently not much operating loss with a 30.9 percent going in gross.

The second ad was a fresh picnic ad. Again competitive, but shall we say, not too impressive. Well! What happened? $6,401.99. My gosh! A $600 drop in sales from the previous week. Right away the "I

told you so bunch" said, "We told you the ad was not strong enough!"

"But wait a minute, mister, we have the facts here." "Gross profit up eight percent; mark downs 6.46 percent, gross profit dollars--the kind you put in the bank--up $400; tonnage up 456 pounds." With the facts--not theory--the market down the street did not have the best ad. We do not have to cut prices next week because we thought sales were down.

You have heard of going in gross many times. Have any of you ever used this tool for checking out a market?

These figures I am going to quote are averages taken from several of our retail units. I will give you the commodity, the gross margin goals, the sales mix, and gross profit each contributed to overall profits, or going in gross.

Commodity	Gross	Mix	CTO
Beef	28%	40%	11.20%
Poultry	30	18	5.40
Veal	28	2	.56
Lamb	30	2	.60
Pork	35	12	4.20
Variety Prod.	32	2	.64
Luncheon Prod.	28	18	5.04
Smoked Prod.	25	6	1.50
		Going in Gross is	29.14%

Going in gross indicates gross profit obtainable by the meat department on all products purchased without the reduction resulting from advertised items. It is also a helpful tool that will indicate whether you are buying or selling an excessive amount of low gross ite ms, or underpriced items, or ad items.

This is also one of the finest tools to judge and prove out an operation. For illustration, let's assume you are regularly cutting a good 21 percent or 23 percent gross profit. How do you know you are cutting exactly as you planned? Let's assume from the preceding figures, which show a pork sale,

that your profit that week was 23 percent, or your mark downs were 4 percent. So, we have a total of 27 percent. Your going in gross shows 29 percent, or a shortage of 2 percent. This figure represents a $100 loss on a $5,000 market per week or a loss of $5,000 a year. Can you really afford this type of operation?

Your gross profit should average from 22 to 24 percent every week, but never less than 21 percent. When it falls below 21 percent, you are creating unnecessary expense. Worst of all, you seriously jeopardize the ability of an owner to stay in business, and also to provide a job for you. As an example, we will use a $5,000 weekly meat volume, and a meat department personnel cost of $400 per week to clarify this statement.

On a $5,000 a week meat volume every one percent below 21 percent actually adds a $50 extra expense to your meat department operation.

Weekly Sales	Percent of Gross Profit	Weekly Salary	Loss Under 21	Cost
$5,000	21%	$400	None	$400
5,000	20	400	$ 50	450
5,000	18	400	150	550
5,000	16	400	250	650

At 16 percent, your cost is a huge $33,800 per year, or an added burden of $13,000 of unnecessary loss. This type of operation not only results in a tremendous cost, but also limits, if not entirely eliminates, the advantages of a vigorous competitive advertising campaign, and seriously retards your ability to remain in business.

Some of the most challenging opportunities facing retailers today lie in the following areas:

1. Reducing cost through improved performance by:
    a. ordering practices
    b. scheduling deliveries
    c. product specifications and utilization
    d. product handling

2. Increasing assurance of customer satisfaction through:
   a. selling the features that make up the concept of real values
   b. through adding more educational information on meat to help your customer select and use the meat she buys

Each of us has our own opinions and ideas as to what is best and how we believe things should be done, but for a supermarket today, to prove itself, it must have a successful meat operation, or it will struggle along. Too many are operating their markets purely by guess work and adjust their selling prices to the same or less than their competition hoping to make a profit. Your competition, we hope, is not doing the same thing, don't you?

However, we should realize that the meat department operation must be handled in a little different way. Once this is realized our major objectives "profits and sales" can be accomplished. Records and percentages point the way to specific destinations. The records are plans or work maps that help interpret the advertising plans, the feature displays, the holiday sales, the paydays, and the inventories, while with percentages you can intelligently put a selling price on meats. You can compare primal cuts to the whole carcass. You can determine gross margins. You can compare the total expense of operations to sales. A large part of lost profit is due to incorrectly figuring margin on cost and expense on selling price. You can make 25%--50%--100%--1000% on cost, but cannot make 100 percent on sales unless the cost is zero.

I keep thinking of the often used word "procrastination." Is this what we have been doing for the last 20 minutes--or the last--how many years! A major problem in all of life's ventures is procrastination. The word comes from the Latin word "pro", meaning "forward," plus "crastinus," belonging to "tomorrow", a postponing action! Most of us are inclined to put off until tomorrow, or the day after, what needs to be done today. We find this to be true so many times, especially in the meat department. Yet, we have reached a stage in the modern complex world where we no longer can put off until tomorrow, what should be done today. The techniques of meat management are changing at an ever increasing rate, even the most energetic marketers have a tough time keeping know-how up to date.

In our company, whenever we have been called in to solve various situations, (I call them situations because they are easier to solve than problems.) we have never yet been able to solve a problem of a meat department in either sales or gross profit by checking only one area of operations.

The way to solve a large problem is to break it down into several small problems and then solve each one of them. Your meat department could be an outstanding example of this strategy. The big problem is poor gross profit and low percent of total sales. The small problems are in the following areas:

NO. 1--ORDERING--a small problem.

This is one of the most important factors in operating a meat department. You either order for an increase in sales or a decrease in sales.

- Good ordering is the foundation of a well-managed department. Remember your objective in ordering properly is to get the right merchandise at the right price, at the right time, in the right amount to fit your planned work schedule.

- Watch for too much of any one item left over, or too many packages going into the bone can. Are you running out of any item the customers want? Are you coming out right on the ad items?

- Good ordering takes time and wise planning, based on accurate records and a definite sales plan on how to realize the most profit from your ad every week.

- Know your product mixes and what you are making money on. A complete weekly tonnage record should be kept to determine the weak spots and strong spots in your department.

NO. 2--RECEIVING--a small problem.

- To produce the desired gross profit results from your retail price structure, you must receive from your own meat warehouse and meat packer, every last pound of product that you are being charged for and the product must be in excellent condition.

- Be sure that it is the quantity ordered and that the billed weight equals the delivered weight. If there are any shortages, make claim forms out immediately.

- Record the bill immediately on your register sheet.

- Make sure the quality and size meet your specifications.

- Make sure the price is the one quoted and the extensions are correct.

NO. 3--COOLER CONTROL--a small problem.

The complete follow through of accurate ordering and accurate receiving can be washed out completely by incorrect rotation, temperature or orderliness--anything there that shouldn't be.

- Make sure your cooler is a working tool and give one man the responsibility for seeing that it is maintained in the peak of condition at all times.
- Have a definite place for each meat and see that it is kept there.
- Keep odds and ends cleaned up.
- Remove all boxes and cartons immediately as they are emptied.
- Spot clean the cooler daily and scrub down completely once a week.

NO. 4--INVENTORY CONTROL--a small problem.

Not enough time and thought is given to ordering of meats. The ordering of meats is done largely from habit and automatically. Lack of consideration to the sales plan for that particular week can cause large overages of products which result in heavy perishable inventories.

- Accurate ordering and tonnage records are a must--refer to them often.
- Order to sell, remember you cannot make money on what won't sell. In fact, you lose by shrinkage, aging.
- Know what you have on hand by taking an accurate inventory of cooler and case before ordering.
- Recognize and control slow movers.
- Be wary of so called "good buys" on all items, and especially on semi-perishables and other slow movers like canned hams, and several other items. They tie up your money, hold down turnover, and are very speculative.
- Watch pay days, seasons, supply conditions, they all affect product movement.

NO. 5--CUTTING METHODS--a small problem.

While everyone agrees that a display can attract a customer and make her reach out for a certain cut of meat, it must not be forgotten that the meat product has good color, that its quality is what the customer expects.

- Give each man definite job assignments, based on his skills and ability.
- Let him know where his responsibility begins and ends.
- Hold each man responsible for results.
- Make each man responsible for his own odds and ends.
- Make sure he completes a job before moving on to the next.
- Make sure cutting and trimming is to your standards, and check back to be sure it is maintained.
- Any piece of meat not representing a center cut should be handled immediately and readied for sale at the time of or in advance of preparing the center cut portion.
- Keep a tight control on fresh meats the first of the week to avoid conversions; and a record of conversions by the day.

NO. 6--ACCURATE CUTTING TESTS--a small problem.

There is no person so good that they can remember the prices of from four hundred to five hundred items, and the prices change every week. Incorrect pricing, be it in our favor or the customer's favor, hurts our profits and sales.

- Take basic cutting tests each week on all ad items in addition to basic commodities when they can be worked. It should be no problem to get four basic cutting tests per week.
- Definitely take cutting tests before changing prices or cutting methods.

NO. 7--DISPLAY METHODS--a small problem.

What are the best techniques for creating effective displays, the answer should be simple. What sells is good, the best proof that a display is proper for his customers is his sales sheet. There are scores of modern ways of "dressing up" your products.

- Know your hot spots and plan to put high profit merchandise into them.

- Know what you are making a good long profit on, and widen out on these items, keeping them on display at all times.

- Develop spacious sections of high profit commodities, such as a large poultry section, a large ground meat section with abundant variety and a complete pattie section adjacent to the ground beef section.

NO. 8--MERCHANDISING PROCEDURES--a small problem.

When Mrs. Housewife makes up her mind and takes a package from your display case, the sale is the result of all your efforts beginning with the writing of the order for the meat right down to the point of purchase signs.

- Make it your business to always know what you are "long" on in the cooler and make immediate changes in cutting procedure and displaying before it affects your gross profit.

- Always try to have two or three ways of cutting and merchandising your basic primal cuts, then you are much more versatile. Beef rounds and chucks are good examples of merchandising your basic primal cuts.

NO. 9--VARIETY--a small problem .

Your customer has been conditioned to buy your advertisements, by the big red signs on the windows, the point of purchase signs. But if she buys, what she buys, and how much she buys depends on your counter display.

- Always keep in mind that variety of product as far as the customer is concerned is much more important than variety of packer branded names of the same commodity, and that we are not only interested in customer satisfaction, but also gross profit dollars and inventory turns. Too many packer brand names of any one commodity, of course, affect this adversely.

- Here we should also mention packaging variety, and by this we mean a variety of two, three, four, and five pork chops to a package. In addition you should have a complete variety of thick and thin chops, steaks and roasts.

NO. 10--BRAND NAME VARIETY--a small problem.

Six brands of bacon, six brands of weiners, six brands of bologna do not make eighteen different varieties.

- Closer order control needed here to determine product velocity and gross dollar return in culling out your slow moving items.

- Think in terms of dollar sales and profit per lineal foot, and more often than not you can take less items and spread them out and get more sales and gross profit dollars return. It will also make ordering and stocking of your case much easier.

NO.11--RETAIL CASE MANAGEMENT--a small problem.

Offer only fresh, inviting, clean, properly cut meat in your case. The most interesting displays will fail to sell your product if it is not neat, immaculate, and bright in color.

- Make one person responsible for stocking and displaying the case.

- Adhere to strict codes of case life. Such as:

  1. one day on all ground beef.
  2. two days on all beef.
  3. two days on all pork.
  4. five days on smoked meats.
  5. seven days on lunch meats.
  6. two days on offals.

- Also, go through your case every morning the first thing, and following code standards remove all outdated products, and make your conversions--round steak into cube steak. Under no circumstances should you allow this product to go back into the cooler, but process it immediately.

- Grind ground meats more often, at least three to four times daily and in smaller quantities. This will keep your product fresher and you won't get "burned" so bad at the end of the day.

NO. 12--RETAIL PRICE STRUCTURE--a small problem.

Supervising the cutting policy on which retail price tests and retail selling prices are based is another urgent policy.

- Know what your product costs at all times.
- Know what you must have in mark up.
- Take periodic cutting tests to know how you are coming out and this is a must when prices or cutting methods change.
- Know what competition is getting.
- Be aware of seasonal market demands for retail product, and change accordingly, i.e., demand for steaks in summer, and roasts in winter.

NO. 13--PRE-PLANNED WORK SCHEDULE--a small problem.

Certainly, today's meat managers have a job that calls for not only high ability and long hours, but intensive concentration and organization of functions.

- Actually in order of sequence the big problem starts right here; you must have a planned work schedule before you can even order properly.
- Have meat cutters take their days off early in the week, no later than Wednesday. This way, you can have a full crew Thursday, Friday, and Saturday.
- Bring meat men in one or two hours earlier in the morning, especially on weekends; this will give you a couple hours of uninterrupted work before the store opens. You'll be ready for business and can stay ahead all day.
- Try to get as many jobs done as possible by Wednesday night.

- Have all carcass beef completely broken into primal cuts and the boning completed 100 percent by Wednesday night, the importance of this is not the breaking of beef but getting the trim out and sold while still fresh.

NO. 14--PLANNED AD ITEM MERCHANDISING & PLANNED PROFIT PROMOTIONS--a small problem.

Let's not forget, while display is considered a trump card in selling, it's effectiveness depends on many other vital phases of meat merchandising.

- Think--plan--then follow through. Think how you can merchandise your ad most profitably. For instance, you should cut three out of every ten rounds on a sale into top round and bottom round steak, eye of round, and rolled roast of round, plus many other items.

- Plan your case layout so you scatter your ad items throughout your entire case, always putting high profit merchandise next to ad merchandise.

- Follow through to make sure your ad items are adequately displayed and that the case is merchandised for profitable sales, not just sales.

- Menus change with the season; think in terms of meals and plan to feature profit promotions of seasonal products.

NO. 15--CLEANLINESS AND FRESHNESS--(this is the most important policy at store level)

Cleanliness and freshness in the meat department generally go together. There is nothing more repulsive than a dirty meat department or a meat case filled with outdated meat that has lost its bloom. Dirty aprons, uncombed hair, unpolished shoes, and no ties, lend their part to untidyness.

This type of operation certainly reflects itself on the standards of the freshness and cleanliness of the management of the company. Nothing can hurt your sales, hurt your profits, hurt your reputation more than this type of operation.

NO. 16--HUMIDITY AND REFRIGERATION--a small problem.

I have noticed a lot of meat quite often hanging out on the cutting room rail for prolonged periods of time, out of refrigeration. This is bad on the bloom and case life of the products, especially this time of year.

- Continued exposure will change the color to a brown or grayish red.

- Excessive moisture in the cooler can cause excess shrinkage. Check your cooling units; they may be tipped just enough so when on defrost the air will blow excessive moisture off of any ice, or water that may not have drained. Meats absorbing this will cause wet packages, quicker discoloration, and excess loss.

- Poor refrigeration or 8^{o} difference in temperature will cause bacteria to grow three times faster.

- Humidity and temperature must be combined with good sanitation to control effectively, loss due to bacteria and moisture during processing.

Today, Mr. Glaub is enjoying store sales of between $55,000 and $60,000 a week. His meat department is doing about $11,000 to $12,000 in sales. The last two years Walt has enjoyed an average gross in his meat department of 23.5-24 percent. These are outstanding facts and figures and were only possible through good management. The healthy P & L enjoyed by Walt was built by strictly following the preceding 16 building blocks. Now, when you see Walt either in the store or on the street and you say, "Hi, Walt. How's things?" "Fine," he says, smiling on his way to the bank.

Now, just a few remarks in closing. It is a profitable investment of time to pause now and then to take stock in the activity of your meat department. What I have brought out here in these 16 points are profit blocks to be looked at as positive solutions rather than problems in establishing a healthier P & L. By doing so, we will provide a positive operation to our meat market's success. Each one of these blocks must be put into effect individually, with equal emphasis to create the overall profit picture that you deserve for your time, your effort, and your investment.